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## Ministerial Changes

THE resignation last week of Lord Leathers, who is to have no successor as Secretary of State for the Co-ordination of Transport, Fuel & Power, means the abandonment of the "overlord" system of ministerial responsibility as it affects transport, and, therefore, abolition of one layer of Governmental control between the Cabinet and the nationalised railways. The co-ordination of policy, in so far as it cannot be done direct between the public utilities or the Government departments concerned, will be effected by Cabinet committees or in some cases by the Cabinet itself. With the passage of the Transport Act in May, the responsibility for the forthcoming White Paper on reorganisation of the railways is that of the Minister of Transport, Mr. Alan Lennox-Boyd; he is not, however, included in the Cabinet, of which Lord Leathers was a member. The simplification and reduction in size of the Governmental organisation concerned with transport are themselves desirable, and the amalgamation next month of the Ministries of Transport and of Civil Aviation is a step in the right direction. The

combined Ministry should be quite adequate to deal with transport questions in what may be hoped to be an era of minimum Governmental intervention in the functioning of the railways as of other forms of transport. Another Ministerial change last week was the appointment of Mr. Derek Heathcoat-Amory as Minister of State, Board of Trade, with special responsibility for the promotion of exports. How far this will affect the industries manufacturing railway material for export remains to be seen. These industries already are efficiently organised for production and for marketing their products overseas, and enjoy the co-operation of the Government in allocating raw materials.

## United Railways of Havana Sale

A PRELIMINARY agreement for the purchase of the United Railways of Havana by the Cuban Government was signed in Havana on September 5. The sum involved is 13,000,000 pesos (about £4,642,800), to be paid, it is understood, in U.S. dollars. Deeds transferring the property will be signed within 90 days; the interval is necessary to allow time for the documents to be prepared. The Cuban Government will acquire all the company's assets and physical property in Cuba and relieve the company of its legitimate debts. It will then establish a new company with a capital of £30,000,000 to rehabilitate and operate the undertakings under the name of the Occidental Railways of Cuba. The external claims of the company are not expected to be large, and most of the compensation money should be available to reimburse the different classes of stockholders on a basis which was settled last year when the scheme of arrangement, referred to in our issue of October 24, 1952, was agreed to. The uncertainty of the future of the railway originated in June, 1949, when the then Government of Cuba appointed an interventor to supervise and control its affairs. Mr. Axel Wenner-Gren, the Swedish financier and backer of the Alweg monorail system, has been negotiating recently over the United Railways. He may resume negotiations with the President of Cuba, who, he says, is not "convinced of the State's full ability to run the railways."

## French Winter Passenger Services

EXCEPT for major developments during the summer or autumn such as inauguration of electrification, which necessitate far-reaching timetable revision, the French National Railways winter passenger timetable, introduced in October, usually embodies few important changes. As with other European railways, these normally are introduced with the summer service. From information so far received the winter timetable includes fewer improvements than usual. Advantage is taken of inauguration of electric traction between Lyons and Culoz to accelerate some services to and from the French Alps and Geneva. The proposed deceleration of the Calais-Paris boat trains connecting with the Folkestone-Calais sailings is disappointing. The "Golden Arrow" now will take 7 hr. 39 min. from Victoria to Paris via Folkestone and Calais. In view of the efforts by British Railways to accelerate this service, the fine ships, and the luxurious rolling stock on both sides of the Channel, it is a pity that running beyond Calais cannot be brought up to the standard of other expresses in France.

## Regular Interval Services in South Wales

A RADICAL alteration is being made to the local passenger services of the Western Region out of Cardiff. On and from Monday week there will be regular interval departures to Barry or Penarth, and to Pontypridd and Caerphilly and beyond. As at present, most trains will run through Cardiff from Barry or Penarth to Treherbert or Merthyr; this through running is now to apply also to the Rhymney line, whose trains at present terminate in Cardiff, at Queen Street, Bute Road or General stations, and will obviate much interchange. The new services, which are described at greater length elsewhere in this

issue, are being well publicised in the district by poster and pocket timetable. When the complex railway geography of this part of the country and the intricate nature of its passenger and mineral train services are borne in mind, the difficulty of making such a drastic change becomes evident, and it is to be hoped that public support for the new facilities will be such as to justify the hard work by the Timetable Department.

### British and American Stations

AMERICAN visitors to this country often are critical of the design and condition of British passenger stations. Such criticism doubtless is justified in some cases, but, apparently, it is not confined to Great Britain. Mr. A. F. Arpaia, a member of the Interstate Commerce Commission, has described American stations as "dark, drab and gloomy . . . as inviting as a mausoleum . . . drafty, poorly-arranged and badly-lighted." These shortcomings he included among "the most trying experiences of train travel," and by virtue of his official position, he should be well qualified to judge from ample experience of continent-wide travel. American railways have not been handicapped like those of Britain by war damage and war-accumulated arrears of maintenance, which are being made good gradually, despite financial restrictions and shortages of material. On the other hand, the financial position of the U.S.A. railways between the wars precluded much work on improving passenger amenities and even on station improvements called for by passenger traffic developments. Now, however, they are spending millions on modernisation and rehabilitation, though mainly on freight facilities, as compared with the relatively meagre resources available for station improvements in this country.

### Rolling Stock for Peruvian Corporation Railways

THE physical characteristics of the Central and Southern Railways of Peru, owned and operated by the Peruvian Corporation Limited, are such as to provide arduous operating conditions probably unsurpassed anywhere else in the world. La Cima, on the Central Railway, 15,806 ft. above sea level, is the highest point reached on a standard gauge adhesion railway, and La Raya on the Southern Railway, also standard gauge adhesion, is 14,153 ft. above sea level. To combat rising operating costs by means of improved payload, the Corporation placed orders with Craven's Railway Carriage & Wagon Co. Ltd. for a quantity of lightweight rolling stock, the tare weight of which should not exceed 19 tons, with the object of replacing five-car, by six-car trains. By adopting an integral all-steel welded design, and disposing of the members where their strength could be utilised to the greatest possible extent, a saving in weight of 28.6 and 26.4 per cent was achieved, compared with carriages now in service of similar capacities, and since the bogies constitute some 41 per cent of the total tare weight of the stock, the saving is very appreciable. A description of the rolling stock is given elsewhere in this issue.

### Regenerative Braking with Single-Phase Current

THE increasing attention being paid to single-phase electric traction by developments in 50-cycle systems, particularly the recent inauguration of public services on the L.M.R. Lancaster-Morecambe-Heysham route, may well direct renewed attention to regenerative braking with alternating current. In recent years great improvements have been made in certain established systems using the "railway" frequency of 16.6 cycles. The idea of regenerative braking dates back to the beginning of electric traction for main lines, for the early systems were a.c., and on three-phase lines regenerative braking was inherent. But on single-phase lines of the 16 $\frac{2}{3}$ -cycles type, self-excitation phenomena, low power factor at the contact line, and a large amount of auxiliary apparatus usually produced disappointing effects. Within the last ten or twelve years new regenerative braking connections have been applied

in the low-frequency system in Switzerland which seem to have been much more successful. These developments were recently made the subject of an almost monumental article on regenerative braking for single-phase railways by Mr. P. Leyvraz in the *Bulletin Oerlikon*, which dealt not only with that company's own work but with the developments of every other maker and railway in the most complete fashion.

### A Private Railway in N.W. Germany

THE Bentheimer Eisenbahn, one of whose classes of steam locomotives was described in our issue of September 4, is one of the many private railways still remaining in Western Germany. With a route mileage of 45 and its headquarters at Bentheim, it lies along the north-western frontier of Germany, west of Rheine and Münster, and connecting with the lines crossing the Dutch frontier from Oldenzaal via Bentheim to Rheine, Enschede to Gronau, and Coevorden to Laarwald, not all of which have been reopened to passenger traffic since the war, though Western Germany and the Netherlands each maintain a service to its own frontier station. Only the line through Bentheim carries through passenger traffic, in the form of the "Holland-Scandinavia Express" and other trains between the Hook of Holland and Amsterdam and German cities, and British military traffic. On the Bentheimer Eisenbahn, particularly between Bentheim Nord and Gildehaus Mitte, and Bentheim Nord and Nordhorn passenger traffic is quite heavy, but much of it now is handled by three double-bogie 71-seat 400-h.p. diesel-hydraulic railcars capable of hauling one or two trailers, or of operation in multiple-unit at speeds up to 50 m.p.h. There are, however, 23 steam locomotives of various classes in stock which handle the appreciable freight traffic as well as passenger services, including oil traffic from the small field east of Laarwald.

### An Unusual Water Gauge Failure

WE hope that Mr. J. L. M. Moore's report on the collapse of the firebox on a Western Region engine at Wheatshaf Junction on December 22, 1952, summarised in this issue, will receive the publicity he considers should be given to it. Boiler failures can, and most often do, bring with them such distressing consequences that too much care cannot be paid to instructing footplate staff on the steps to be taken to ensure that they are not being misled by a defective water gauge. The initial cause of the trouble in this case was most unusual, a combination of a slight misalignment of the fittings with over-zealous action by an apprentice fitter producing a concealed break in the gauge tube, which allowed the packing washer to spread and gradually to obstruct the flow of the water. A deceptive reading became created in due course and this by another combination of circumstances, to which engine-men contributed by failing to specify precisely the fault they had observed, was never corrected. The engine was sent out again four days after the tube became broken, and the accident followed. Mishaps can occur, of course, when every care is taken. It is their lessons going unheeded that gives cause for alarm.

### Efficiency of Central Heating Boilers

FUEL being a major item of railway expenditure and one of the most important national assets, British Railways have issued a booklet which sets out in simple and concise form contributory factors necessary for efficient control of combustion in fixed boiler installations for central heating. The attendant can exercise control over the process of burning fuel economically only when he is fully conversant with the means of making the best possible use of the resources at his disposal. That does not mean that the boiler attendant needs to be a chemist, but as he is in charge of a plant wherein chemical reactions are occurring, the need for at least some knowledge of their nature is obvious. It is intended to arrange for British Railways' stokers of central heating boilers to attend demonstration courses, and the booklet is to form

the basis of instruction. The boiler and the equipment are dealt with in detail, and the various processes are well illustrated by a number of diagrams.

### British Railways Locomotive Tests

AS mentioned briefly in our July 3 issue, British Railways recently published Bulletin No. 5, which gives the results of tests with the class "7" standard 4-6-2 locomotive, and a review of the results is given in the first of a series of articles elsewhere in this issue. Most of the bulletin is concerned with tests carried out at the Rugby Testing Station, but particulars are also included of performance in controlled testing conditions at high and medium rates of power output. In the latter conditions a firing rate of 5,600 lb. of coal per hour with two firemen produced with a train loading equal to 850 tons and at a mean speed of 47 m.p.h., an average drawbar horsepower of about 1,800, while with the equivalent to a coach loading of 540 tons, the mean drawbar horsepower was about 1,300 for a coal consumption of 3,360 lb. per hour. Taking into consideration the fact that the test-runs were made over continuously rising grades between Lazonby and Crosby Garrett on the Settle and Carlisle division of the L.M.R. main line, it is probably safe to assume that a 550-ton passenger train at average speeds around 55 m.p.h. would mark the limit for these engines.

### A Welded Boiler Rebuild

TECHNICALLY perhaps the most interesting steam locomotive on show at the Munich Transport Exhibition is the former Bavarian State Railways 4-6-2 of class 18.5. Typical of the many four-cylinder compounds of varying wheel diameter built by Maffei for the Bavarian State Railways, some of them with bar frames, this particular locomotive was one of a batch numbered 18.509 to 18.529 in the old Reichsbahn list, and had 6-ft. 2-in. wheels, and a height of 14 ft. 1 in., whereas Reichsbahn locomotives generally have been limited to 13 ft. 10 in. Since the war many of these former Bavarian types have been scrapped; but in 1950 five were selected for rebuilding at the Krauss-Maffei works with all-welded boilers. This construction was developed in Germany during the war, and later applied also to the postwar 2-6-2, 2-8-4T and 0-10-0T standard types. The new all-welded boiler has a grate area of 44 sq. ft. compared with 48½ sq. ft. in the old boiler, and the heating surface (fire-side) has been reduced to 2,100 sq. ft. from 2,170 sq. ft. Nevertheless the rated evaporative capacity has risen to 30,000 lb. an hour from 25,500 lb. These five locomotives have now been reclassified 18.601 to 18.605.

### Winter Traffic Prospects

DESPITE restrictions on capital development and shortages of material and manpower, good progress has been made in the last year or so in making good the wartime arrears of maintenance of British Railways, and, within the limits imposed by these factors, in improving in some respects on prewar methods and performance. Now, on the eve of their reorganisation under the Transport Act, 1953, they can face with confidence the physical difficulties of operation which a severe winter may bring, and be confident of dealing successfully with any transport demands that can reasonably be foreseen.

In passenger operating the most encouraging factor is the success that has attended the inauguration of faster passenger services in the summer timetable. Punctuality figures for the peak holiday period are not yet available; those for the four weeks ended June 13, which included the Coronation but only the first few days of the summer timetable, show an improvement in the timekeeping of expresses. This shows that staffs were alert in dealing with the abnormal traffics of that period. Indications are that the policy of raising speeds as improved track maintenance allows has been successful, which explains the further accelerations in the forthcoming winter timetables. Whilst

the shortage of steel has delayed the carriage building programme, and there are still 6,000 coaches which would have been withdrawn from service had replacements been available, the problem of coaching stock is less acute during the winter period.

How far the policy of passenger accelerations has been successful commercially it is hard to say, because of the alterations in fares since last year, though passenger receipts have been up on last year during the peak traffic periods. One notable feature has been the phenomenal success of the "Starlight Specials" run at low fares between the major population centres of London and Glasgow and Edinburgh during the summer, but these trains are being withdrawn during the winter period, when traffic is unlikely to justify the fare reductions.

Whilst the summer timetable has provided for the running of 3 per cent more steam and 1.3 per cent more electric coaching train-miles than last year and the winter coaching mileage is about the same as a year ago. In so far as accelerations result in quicker turnround of stock and reduced man-hours the policy of acceleration is affording considerable operating economies besides attracting traffic. At all events the accelerated winter services, which include carefully studied improvements such as the new morning business service from London to Newcastle, are likely to prove as satisfactory to the travelling public as any since 1939, and with new locomotives available and the continual improvements to the track the prospects are of an increase in passenger traffic over last winter and of an improvement in punctuality within the limits set by the British winter climate.

If total freight tonnage during the peak traffic weeks of the summer has tended to exceed last year's figure, this is largely a matter of increased steel and coal outputs, and it is problematical whether these will continue to exceed last year's tonnages during the winter. Merchandise traffic may well decrease. The number of wagons available is slightly less than a year ago, but improved freight train schedules and goods station working with rationalisation of marshalling yard working, the closing of certain yards, recasting of goods services, and placing in service of new wagons including special types such as high-capacity iron ore wagons, have gone far to improve wagon availability.

Should the winter prove severe, the organisation devised two years ago, for joint action in case of emergency between the railways, road transport, and railway users, still stands, and can be put into operation as necessary. Co-operation between the Regions in the routing of goods trains can avoid traffic centres congested as a result of extreme weather conditions, should the necessity arise. With conditions generally improved, including manpower availability, the likelihood of extensive delays because of a hard winter seems much smaller than ever before. The capacity of British Railways to deal with traffic in an emergency and abnormal conditions was tested by the floods last winter, when the Regions concerned proved themselves highly efficient in this respect.

The number of locomotives available, both passenger and goods, is slightly less than a year ago, in accordance with policy. Here again improved user is the answer, and as with passenger and goods rolling stock, there is no reason why motive power should not prove adequate for the traffic offering.

### Railway Sappers

SOME idea of the duties in and connected with railway transportation performed by the Royal Engineers and of the railway equipment used for training could be gained by those who last Saturday attended the Public Day, which also marked the jubilee of railway work there, at the Transportation Centre, R.E., at Longmoor. A short account is given on another page. Because the transportation commitments of the army in peacetime are restricted, and those largely overseas, the enormous potential wartime expansion that has to be provided for tends to be overlooked, as also the scope of railway constructional, operating, motive power,



stores, and telecommunications activities in which railway troops on active service must be proficient.

In 1939, the transportation troops available for active service numbered some 4,000 all ranks; in 1945, the corresponding figure, including those from the Commonwealth forces and from the Royal Indian Engineers, was 152,000; and during the war nearly 138,000 officers and men passed through the Transportation Centre for training or as drafts and reinforcements. Besides training activities Longmoor became an important transportation stores depot, which had grown by 1944 into an establishment with a staff of 1,500 holding 170,000 tons. In all, over 1,000,000 tons of stores were handled, at an average rate of 50,000 tons a month. Today several Transportation units are serving abroad, including a composite squadron in Germany and a Railway Squadron in the Middle East. At home, the working of W.D. railways serving depots throughout the country, with a total length of about 600 miles, is the responsibility of 1 Railway (Home) Group, R.E., with headquarters in London. The headquarters of the Transportation Centre, R.E., with the Army Movement Control School, is at Longmoor, where all railway training takes place.

The work of the Movement Control Branch of the Royal Engineers, the units of which execute the orders of the "Q" (Movements) branch of the staff, is even less well known, not only to the public but also to the fighting services and to the rest of the army. The Movements staff arranges priorities and rates of flow by all forms of transport; Movements personnel must have a broad understanding of railway problems and be able to co-operate with railwaymen, whether railway troops or civilian railwaymen at home or overseas. Both Transportation and Movements units must undergo military training.

The rapid wartime expansion means that Transportation and Movements troops must be largely reservists. Besides the nucleus of Regular Army units the Army Emergency Reserve, R.E., is an important element of Transportation troops. Unlike the Territorial Army, the A.E.R. has only one annual commitment, the two weeks' training in camp. The success of these camps can be judged by the excellent spirit throughout all ranks of the A.E.R. and the enthusiasm with which they undertake an intensive fortnight of training each year. Most of the officers and men are active railwaymen or have railway experience, and most senior A.E.R. officers occupy responsible posts on British Railways. With Movements, the net is thrown somewhat wider, some of the reservists being travel agents and in similar occupations. In both cases, however, most reservists today receive the active encouragement of their employers in joining the A.E.R. and attending camp, as was the case with the railway companies before the war and the Supplementary Reserve, the forerunners of the A.E.R. of today. This keenness and co-operation are encouraging. Those regulars, however, must not be forgotten who as Transportation troops attain a high standard of efficiency as railwaymen besides fulfilling the exacting demands which the army makes on professional soldiers, nor, least of all, those officers and other ranks who as instructors and permanent staff devote themselves to promoting the efficiency of military railwaymen.

### The Netherlands Railways in 1952

THE annual report of the Netherlands Railways for the year 1952 contains statistical, operating and financial tables as well as several photographs and diagrams. Profits were fl.5,475,430 against fl.99,696 for 1951 and fl.1,400,000 in 1950. Gross receipts rose by fl.22,100,000 over the figure for 1951, reaching fl.354,000,000. Gross expenditure rose by fl.348,500,000 compared with fl.331,800,000 for 1951.

With effect from 1948, a five-year emergency plan has been put into effect with the object of combining permanent reconstruction with an extensive modernisation programme, and the report reviews the results achieved during these years. Damaged prewar electrified lines have been

restored, and an additional 663 route—km. have been electrified. Work on the final section to be converted under the electrification programme, from Arnhem to Zwolle, was well under way by the end of the year. To replace obsolete and destroyed rolling stock, the Netherlands Railways have acquired 95 electric locomotives, 46 diesel-electric locomotives, 48 diesel-electric shunters, 431 coaches for the electrified lines and 70 trailers for use on both electrified and non-electrified sections, besides some 5,700 freight wagons.

Two hundred and thirty-five route—km. have been converted for electric working between Amersfoort, Zwolle, Meppel and onwards to Groningen and Leeuwarden, bringing the total electrified length of route to 1,283 km., representing 40 per cent of the total route length of the whole system. Steam locomotives accounted for 19,800,000 train-km. compared with 25,000,000 for the previous year, while electric traction covered 35,600,000 train-km. as against 26,800,000.

New bridges have been built at Oosterbeek, on the Arnhem-Nijmegen route, at Doetinchem, between Arnhem and Winterswijk, and over the Mark river where the line between Moerdijk and Roosendaal crosses. New passenger stations were brought into service at 'sHertogenbosch, Zutphen and Leyden, while improved facilities were provided at halts at Rheden and Hilversum (Soestdijkers-traatweg); the new Maas Right Bank goods station at Rotterdam also was completed during the year.

Passenger receipts rose from fl.184,800,000 in 1951 to 200,300,000 in 1952, representing an increase of 8.4 per cent, although the general increase in fares was only 6.8 per cent. Passenger-km. increased by 1.6 per cent. Freight traffic receipts showed an increase of 4.1 per cent (fl.134,200,000 against 128,900,000 in 1951). Despite a slight falling off in traffic, its effect was more than made good by an increase of 7 per cent in the rates for wagon-load traffic. Operating expenditure rose by 4.9 per cent over 1951 to fl.290,700,000 in 1952. The cost of fuel and electric power rose by 20 per cent over 1951 to fl.59,100,000, compared with 49,300,000 in 1951 and 40,500,000 in 1950. Depreciation was increased from fl.48,100,000 to 53,900,000 after extension of the electrified services and rolling stock renewals.

Some principal results are given below:—

	1949	1950	1951	1952
		(Millions)		
Passenger train-km. ...	35.6	39.1	39.8	45.0
Passenger journeys ...	166.6	158.4	156.8	155.4
Passenger km. ...	6,478	6,228	6,291	6,392
Freight train-km. ...	13.7	15.0	16.1	16.4
Freight tonnage conveyed ...	19.9	21.2	22.6	22.1
Net ton-km. ...	2,787	3,016	3,256	3,067
		(fl. millions)		
Passenger revenue ...	173.4	181.4	184.8	200.3
Freight revenue ...	96.6	119.5	128.9	134.2
Gross revenue from traffic ...	279.7	311.2	326.0	348.5
Operating expenditure ...	214.1	230.5	277.2	290.7

Future policy includes changes in the modes of traction, generally taking the form of dieselisation rather than further electrification. Subject to satisfactory agreement with the Belgian National Railways, the management considers that electrification should be undertaken of the two short sections of line from Roosendaal and Maastricht respectively to the Belgian frontier points, both of which carry a considerable international passenger and freight traffic. To provide the services which it is intended to turn over to diesel operation, 122 diesel-electric coaches have been ordered and are to be delivered during 1953 and 1954. A number of the new type of corridor trailer coaches will also be ordered, to replace the existing wooden coaches.

The object of these changes is to eliminate steam traction altogether from the Netherlands Railways. In its final stage, this will require 156 diesel-electric train locomotives and 90 diesel-electric shunting units, all of which are on order. Altered layouts and other works are also to be provided for Leyden, Rotterdam, Eindhoven, Arnhem, and Schiedam, and plans have been approved for a new bridge at Moerdijk which will carry a double track railway in place of the present single-track bridge which was completed in 1871 and suffered considerable damage during the war.



## Progress in Pakistan

PAKISTAN has entered on its sixth year of independence with many of the problems which confronted its railways at and after Partition resolved. The present is a time of intense activity in all departments of the two systems, in the west the North Western, which with its route mileage of 5,363 is the largest in the sub-continent, and in the east the Eastern Bengal, with 1,666 route-miles.

By the time of Partition the rolling stock had badly deteriorated as a result of intensive use during the war, there was an acute shortage of coal and essential stores, and the staff mostly was unfamiliar with the system of working in a changed environment. In addition, there were the changed trends of traffic to contend with. The N.W.R. was called on to arrange for the transport of an unprecedented influx of refugees and the E.B.R. suffered all the physical impediments to the movement of traffic without the redeeming features of the former Bengal Assam Railway whose major assets fell to the share of India. To add to the difficulties, natural calamities such as floods in Western Pakistan and cyclones in Eastern Pakistan caused havoc on the railways.

In spite of the disproportionate rise in working expenses caused by a substantial increase in wages and allowances to staff and in the cost of fuel and stores, the financial results have been gratifying, as the following table shows:—

Period	Receipts	Working expenses	Net gain or loss
	Rs. (000)	Rs. (000)	Rs. (000)
August 15, 1947—March 17, 1948	152,460	159,126	- 6,666
1948-49	351,326	317,903	+ 33,423
1949-50	348,674	328,946	+ 19,728
1950-51	381,610	368,919	+ 12,691
1951-52	417,754	403,503	+ 14,251
1952-53	451,852	384,585	+ 67,267

There has been a steady increase in the number of passengers carried. In 1948 the total was 89,479,641; in 1949, 125,638,203; and in 1952, 132,948,277. Some 4,092,074,381 passenger miles were run in 1948, compared with 6,117,957,923 last year.

Although there has been a considerable lessening of inter-Dominion traffic, the resolute manner in which alternative markets for the country's exportable goods were found and the steady progress of industrialisation have contributed to swell other goods traffic. In 1948, 805,377 wagons were loaded and 1,928,110,587 wagon ton-miles were registered. Last year the totals were 1,247,004 and 2,809,981,499 respectively.

In Eastern Pakistan, a broad-gauge line connecting the Khulna-Benapol section with the Eastern Bengal Railway was constructed and opened in April, 1951. Shaistaganj-Habibganj and Amaura-Chapai Nawabganj sections, each about ten miles long, which were dismantled during the war, were restored in June, 1951. The construction of a metre-gauge line from Sylhet to Chattak (about 20 miles) was put in hand in 1951 and is well in progress. In Western Pakistan, the narrow-gauge Jacobabad-Kashmor section (about 76 miles) is being converted to broad-gauge. Its extension further north via Dera Ghazi Khan as a broad-gauge line (about 198 miles) to meet the Shershah-Kundian line near Kot Adu after crossing the River Indus over the Taunsa Barrage has been approved for construction. A broad-gauge line between Tando Mohammed Khan and Moghalbin (about 70 miles) in Sind also has been approved. Both these proposed lines are very important, but their construction must wait for funds to become available. The Sind line will provide a means of communications in the area served by the new Lower Sind Barrage. A broad-gauge line from Mardan to Charsada (17 miles) in the North West Frontier Province was begun in 1952.

Deterioration of permanent way was particularly severe on the Eastern Bengal Railway which was situated in the war zone. The lack of labour and material during the war and after caused the normal renewal of rails and sleepers to fall heavily into arrears. Much of the normal maintenance also suffered as a result of abnormal con-

ditions. After Partition the renewal of track became an immediate necessity and had to be given priority. During the period under review, about Rs. 13 crores (130 million) have been sanctioned by the Government for improving track and bridges on both railways.

Before Partition, coal supplies for the railways in what became Pakistan were obtained from mines in Bengal and Bihar, which subsequently went to India. In view of this, and considering the high cost of coal which had to be imported from other countries, the Pakistan railways launched a programme of converting coal-burning engines to oil-burning. This also necessitated building tank wagons. In all, 648 oil-burning steam locomotives are operating. The economies achieved in other parts of the world with diesel-electric locomotion determined the Government of Pakistan, after detailed study, to introduce this form of traction. The railways therefore drew up a programme of gradual replacement of old and over-age steam locomotives with diesel locomotives. Nine goods diesel-electric locomotives manufactured by the American Locomotive Company are in service on the North Western Railway. These are in addition to 14 passenger diesel locomotives built by the same firm which are hauling trains between Karachi and Lahore. Of the 40 diesel-electric locomotives ordered for the Eastern Bengal Railway, ten are due to be received by October, 1953, and the deliveries of the remainder will be made in the next two years at the rate of 15 a year.

Orders have been placed for the following additional diesel-electric locomotives:—

	Manufacturer
N.W.R. (broad gauge)	
Nine main line	American Locomotive Company
Ten shunting	International General Electric Company
Nine main line	Clyde Engineering Co. Pty. Ltd. (Australia)
18 shunting	Alsichom, (France)
E.B.R. (metre gauge)	
Eleven shunting	Baume et Mercier (Belgium)

To meet heavy traffic demands on the Eastern Bengal Railway, 25 metre-gauge steam locomotives, built in Japan, have been placed in service.

There has been satisfactory improvement in the condition of coaching stock during the last four years. Old stock has been improved. Forty-five metre-gauge coaches built in Japan have been placed in service on the Eastern Bengal Railway. Two hundred and thirty-five carriages of modern design are being manufactured in France (122 broad gauge for the N.W.R. and 113 metre gauge for the E.B.R.). Deliveries of these will be completed in February, 1954.

Old and over-age wagons are being replaced. The stock is also being augmented to cater for the increased movement of goods. Some 1,827 wagons have been received so far and placed in service (527 on the N.W.R. and 1,300 on the E.B.R.). On order in various countries are 5,596 more wagons (3,772 for N.W.R. and 1,824 for E.B.R.). As many as 1,650 bogies (3,300 four-wheel units) covered wagons and 704 (1,408 four-wheel units) open wagon bodies were built in the Eastern Bengal Workshops and mounted on existing underframes. The Moghalpura Works of the North Western is one of the largest in the East, undertaking heavy repairs to 18 locomotives, 125 coaches and 642 wagons a month. The Saidpur shops of the E.B.R. overhaul two broad-gauge and eleven metre-gauge engines a month.

The introduction of diesel-electric traction has entailed the provision of workshop and shed facilities for repairs and maintenance. A diesel-electric workshop has been set up at Karachi (N.W.R.) at an estimated cost of Rs. 25 lakhs. Orders for the machinery for this workshop have been placed. A similar workshop is also being set up at Parahat (E.B.R.) at an estimated cost of Rs. 50 lakhs.

The Pakistan Government entered into an agreement with the International Bank for Re-construction & Development for a loan of \$27,000,000 for railway development. The loan became effective on June 3, 1952, and will continue to be operated until May, 1954. The bank has so far paid approximately \$6,200,000.

## LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

### Branch Line Closing

August 31

SIR,—In the Spen Valley in Yorkshire a proposal to close all the passenger stations on the local line is being strongly contested by municipal bodies, the Press and so on. We saw the same thing in the Nidd Valley a few years ago: the same protests, the same suggestions for diesel railcars, the same official replies, and the same ultimate end. We saw the same gradual reduction in train services in the years before so that receipts were bound to fall.

The enthusiast, who naturally does not claim to understand all the facts, believes that the closing of lines is retrograde and much prefers a more militant policy toward road competition. He suggests diesel traction, and the authorities reply that the capital cost is prohibitive. They say that the Isle of Wight Railways are losing much money; and yet we read that certain Irish lines are making a successful fight with diesel railcars; and the Isle of Man Railway apparently is paying its way.

Is not the time opportune for an official statement on branch line closing, showing what it has achieved, what alternatives are considered, and in how many cases opposition to closing has been successful? It is ironic that since the railways have become public property it has become increasingly difficult for the public to have direct access to them.

Yours faithfully,  
WILLIAM B. STOCKS

22, Heatherfield Road,  
Marsh, Huddersfield

[Statements have been made by the Railway Executive from time to time on the economies achieved by closing branch lines and on the policy pursued. Further information is contained in the annual reports of the British Transport Commission and of the Central Transport Consultative Committee for Great Britain.—Ed., R.G.]

August 31

SIR,—An article in *The Daily Telegraph* of August 21, though referring mainly to railways in the Isle of Wight, makes general allegations which should be challenged.

Briefly they are as follow:—

(1) "Whether any serious effort has been, or is being, made to make them pay." Services are adjusted from time to time, and cheap fare facilities introduced so as to attract additional traffic, but with little success. Ordinary rail fares, however, should not be more than the parallel road fares, with perhaps fewer restrictions as to availability of cheap fares.

(2) "That branch lines are apt to get the dregs of rolling stock and locomotives surviving from the nineteenth century." In the Western Region comfortable diesel and steam railcars operate infinitely better in comfort and speed than many country bus services which have no comparable waiting-room accommodation and few, if any, shelters available in the winter, whilst the public must wait by the roadside for a bus which may already be full.

(3) "Timetables are often constructed so as to cause far too long waits for connecting trains on the main line" and "A branch-line train is timed to arrive a minute or two after the main-line train to London has departed." If the attention of the district officer is directed to instances of unsatisfactory rail connections at junctions, the matter receives consideration, as constructive criticism is welcomed.

Some, who strongly oppose suspension of branch-line passenger services for economic reasons, never use the railway, being owners of cars, or utilise other forms of public transport, or travel by train very occasionally when

it suits their convenience, with perhaps luggage. The remainder go by rail in too few numbers to justify a regular passenger service.

Yours faithfully,  
H. F. DALTON

263, Eastcote Road, Eastcote, Ruislip

### L.N.W.R. Typewriting Compartments

August 28

SIR,—Your reference in the Scrap Heap of August 28 recalls the L.N.W.R. "City to City Express" service introduced on February 1, 1910, from Wolverhampton at 7.50 a.m., Birmingham New Street at 8.20, Coventry at 8.43 to Broad Street, due 10.35 a.m. The return service at 5.25 p.m. called at Willesden Junction to pick up, Coventry and Birmingham, arriving Wolverhampton at 8.5 p.m. Both trains consisted initially of four coaches weighing 163 tons, including a restaurant car. The typewriting facilities were so well patronised that a second stenographer was provided from October and in the following month the formation was increased to six coaches. It was typical of L.N.W.R. enterprise that work unfinished on the up journey was delivered to the passenger at any address in the city during the morning, or handed to him in the return train.

The North London company, who were responsible for terminal facilities at Broad Street, pointed out that the service was unremunerative to them and the L.N.W.R. agreed to pay a special annual toll of £150 for the two trains.

With an improved evening service from Euston early in 1914, it was found that the loading of the 5.25 p.m. from Broad Street fell below economic level. The service was withdrawn from July 13, being reproduced in a new two-hour service from Euston at 5.50 p.m., with typewriting compartments and two slip coaches for Coventry. The up service to Broad Street and all typewriting facilities were withdrawn from October 5, 1914.

Yours faithfully,  
C. R. CLINKER

9, Regent Place, Rugby

### The "Elizabethan"

August 29

SIR,—In your issue of August 28 Mr. B. Perren raises the question of connections with the "Elizabethan" to provide speedier transit from London to the north and west of Edinburgh.

The departure at 5.5 p.m. from Edinburgh of the train conveying the through coaches to Dundee and Aberdeen seems to be because the 5.5 p.m. from Arbroath is running only 15 minutes behind the 4.15 from Edinburgh, which makes more intermediate stops. This difficulty could be overcome by running the latter train at, say, 4.35 p.m. and attaching the through coaches to it, or, alternatively, to run the non-stop at the traditional time of 10 a.m. from Kings Cross and the 5.5 p.m. as at present.

Good connections to Stirling, Oban, and Perth could easily be supplied by diverting the present 4.25 p.m. (via Larbert) from Princes Street and running it from Waverley at, say, 4.30 p.m. to allow for an easier connection there, assuming the present timing of the non-stop is maintained. The present 4.25 p.m. from Waverley to Stirling over the Forth Bridge gives an arrival at Stirling at 5.50 p.m., against 7.31 p.m. by the 10.10 a.m. from Euston and also gives a day service from London to Oban unobtainable by the West Coast route; unfortunately the connections are rather tight, especially at Edinburgh.

Yours faithfully,  
G. M. STADDON

44, Colinton Road, Edinburgh 11

## THE SCRAP HEAP

### "Royalty in Photographs" Tour

The Victorian Government, through the agency of the Victorian Railways, is bringing to the country people of the State a fine collection of photographs illustrating the life of Queen Elizabeth. The photographs, lent by Viscount Kemsley, are in a specially fitted blue and gold coach, on the outside of which are painted in gold and red lettering the words "Royalty in Photographs." The coach also contains copies of the Crown Jewels lent by Melbourne Public Library. The coach began a five-month tour of the Victorian Railways on June 15.

### Travel in the Isle of Wight

A Lymington correspondent advises visitors to the Isle of Wight to tour it by train.

This is, my informant claims, much the best way to see the beauties of the island.

"Much of the road" he says "has been spoiled by ribbon development, but the railways run through the unspoiled valleys, and from various points, such as the bank up to Wroxall, magnificent vistas of the island's downland scenery can be obtained."

He adds, by the way, that he did not meet with a single dirty carriage.—"Peterborough" in *"The Daily Telegraph."*

### Surviving Cypriot Locomotive

The 2-ft. 6-in. gauge 71-mile Cyprus Government Railway was closed to traffic at the end of 1951, but No. 1 of its 17 steam locomotives was still standing in Famagusta station in June, 1953, as shown in the accompanying photograph. This 0-6-0 side tank locomotive with outside cylinders and Walschaerts valve motion was built for the Cyprus

Government Railway in 1904 by the Hunslet Engine Co. Ltd. (works No. 846).

### Next to Godliness

I left Bournemouth by a Sunday morning train. I found the window of my carriage filthy outside.

So I asked the foreman on the platform if he would lend me a damp cloth so that I could wipe the window. His reply was: "Certainly not, Mr. Harding. It will give me great pleasure to clean the window for you myself."

This kindly man . . . explained that the diesel oil engines make train windows even dirtier than steam ones—and of course even I must admit that there isn't time to clean them between all journeys.—Gilbert Harding in *"The People."*

### Branch Lines

Branch lines, along with mothers-in-law and kippers, have always been fair game for unobtrusive comedians; the ascetic waiting-room, the locomotives, Emmet-like before Emmet, and the carriages with sepia views of Dolgelley and Stranraer; these have always been good for a laugh. And so, with this aura of comedy hanging over it, the urban dweller, cosseted with covered platforms and efficient electric trains, is unlikely to have felt any sense of loss at the passing of a length of wildly curving single track and two locomotives that any engineering museum would cast covetous eyes upon. . . .

It is easy to dwell with slippered sentiment on the unhurried way of life of the small lines which in other circumstances one has condemned as infrequent, outmoded and uneconomical. The fact is the railway "kings" of the nineteenth century laid lines where

financial return looked promising, where they could get land, and where geographical problems were soluble. Thus factory and town and city and port were linked, but the rural areas, unless they happened to be in the way, were bypassed in the first, fine careless rapture of railroad building. Often the small country towns and villages that acquired stations by being in the way had not asked to be put on the line and did not always want to be put on the line; sometimes the station was over a mile from any other house in the parish and, though christened after its new guardian, was found to be within the borders of the next village—a mortal insult. But the most telling criticism was that the trains went to nowhere that the parishioners had ever been to or had any desire or great need to visit.—From *"The Times."*

### George Bradshaw Centenary

The centenary of the death from cholera in Christiania (now Oslo) of George Bradshaw, founder of *Bradshaw's Guide*, fell on September 6. He was born in 1801, shortly after King George III had given the Royal Assent to an Act authorising construction of the Surrey Iron Railway, the first railway in this country for which such an Act was required.

### Consolation

(see *"The Scrap Heap,"* August 14 issue)

Poor Wondering One, whate'er your class or creed,  
My sympathetic heart begins to bleed  
As apprehension damps each dear delight  
And grim forebodings fence you in at night.

'Twas ever thus—to be or not to be,  
As implemented by the B.T.C.,  
But what's the use of getting all "het-up"  
About this enigmatical set-up?

Problems arise (but, then, they always did),  
Answers to which remain perversely hid;  
Let each day's pleasure balance each day's pain  
Until the pendulum swings back again.

Strive to acquire the philosophic mind  
And, ultimately, you may feel inclined  
To do as recommended long ago:  
"Just take the cash and let the credit go."

For what is life but constant ebb and flow?  
Time finds a remedy for every woe;  
Hope on, poor Wondering One, the time may come  
When you may look for the millenium.

A. B.  
E 2



Photo]

[F. Alan Quayle

Hunslet-built 0-6-0 type locomotive No. 1 of the former Cyprus Government Railway



## OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

### NEW ZEALAND

#### Branches Close

The Railway Commission has recommended to the Government the closing of the following branch lines, either in part or whole: Greytown Branch, from Woodside to Greytown; Eyreton Branch, from Kaiapoi to Horrelville; Waimate Branch, from Waimate to Waihao Downs; Outram Branch, from Mosgiel to Outram, and Hedgehope Branch from Browns to Hedgehope.

The Commission is investigating the working of other branch lines that are running at a loss, but these require more detailed study.

### PAKISTAN

#### New Line in Bahawalpur

The Government has approved the construction of a line to connect Muzaffargarh and Dera Nawab Sahib in Bahawalpur State. The estimated cost is Rs. 2.75 crores. Work is likely to start by the end of the year.

The new line will save at least 100 rail miles and will divert most of the traffic from Thal to Karachi and Quetta now passing *via* Multan. It is believed that the possibility of a line linking Quetta with the Kalat coalmines is being examined.

### RHODESIA

#### Royal Train

The "Ivory Train" which carried Queen Elizabeth the Queen Mother and Princess Margaret on their recent tour of Southern Rhodesia was composed of all-Rhodesia Railways stock, apart from the Royal dining and lounge car lent by the

South African Railways. There were 14 steel saloons, all steam-heated, and the train had its own telephone switchboard with 28 extensions. The accommodation included staff quarters, butlers' pantries, a post office and secretarial apartments. The train was hauled by two of the latest "16A" class Beyer-Garratt locomotives (2-8-2+2-8-2). The ivory and gold finish was to distinguish it from the famous White Train of the South African Railways. The tour was from Salisbury to Bulawayo, back to Salisbury, through the Eastern Districts to Umtali, back through Salisbury to Fort Victoria and back again to Salisbury.

### CANADA

#### C.N.R. Grain Loadings

The Canadian National Railways established new high records for grain marketing and loading during the 1952-53 crop year. It marketed 375,678,000 bushels of grain during the crop year ended July 31, compared with the previous record total of 346,413,000 bushels in 1951-52. The cumulative total of all grain loaded amounted to 352,551,000 bushels, breaking the 1951-52 record of 313,930,000 bushels.

#### Ontario Northland Branch to Close

The ten-mile branch between Englehart and Charlton of the provincially-owned Ontario Northland Railway is due to close on May 31, 1954. The line, once crowded with prospectors, settlers and supplies for the Elk Lake and Gowganda gold rushes, is now incurring an annual deficit of \$17,000 on working.

At one time, there was no road into Charlton and the railway business

soared. Goods dropped off at Charlton, then a major centre for early arrivals, went on by teamsters to Elk Lake and Gowganda. Charlton was destroyed by a bush fire in 1922 and was never rebuilt.

The line has fallen into poor condition in recent years and railway officials estimate it would take \$90,000 to put it into good repair. With an annual operating deficit, the expenditure is not justified.

Instead, the O.N.R. will continue freight and express service by lorry to Englehart.

### UNITED STATES

#### "Charge Plate" Credit Cards

The Chesapeake & Ohio has inaugurated a new system to enable business men and other regular travellers to obtain tickets on credit with a minimum of trouble. Each such user of the railway is supplied with a metal plate, embossed with the holder's name and address, which is attached to one of the C. & O. credit cards that have been in use for some time past. The ticket clerk inserts this plate in a machine which automatically records the transaction and marks the customer's name and address on the record. The plate will be honoured at all C. & O. stations, at the company's resort hotels, in dining cars, on its Lake Michigan ferry steamers, and at stations where motorcars may be hired.

### FRANCE

#### End of Strike

The strike, which had lasted nearly three weeks, ended on Wednesday morning, August 26, and traffic conditions became virtually normal all over France. The S.N.C.F. announced the previous evening that long-distance trains would begin running, according to the timetables, in the morning from the Paris termini. Some restrictions would temporarily apply to traffic in the Northern and South-Eastern Regions. At the same time regular suburban services were assured. The Paris Metro lines and bus services also began running normally on the Wednesday morning.

It became clear that the strike was petering out when a few days before the end the non-Communist federations advised the railwaymen to return to work. Railway traffic showed gradual improvement, but the Communist-led federation continued to urge continuance of the strike. Meetings of railwaymen in stations and depots had shown a growing tendency for the men to declare the strike at an end, despite the advice of their leaders. Finally in face of this trend, the federation revoked its earlier decision and advised its members to join the others in resuming work. Postal workers also abandoned their



The Royal train of the Rhodesia Railways, conveying Queen Elizabeth the Queen Mother and Princess Margaret on their tour of Southern Rhodesia

strike on the Wednesday, and those in the gas, electric and other nationalised services followed suit next day.

Ostensibly the strike was called in protest against the decree laws, but before the decrees were issued. When they were published, it was apparently found that they were not so objectionable as had been imagined. The men, however, continued to protest but mainly against the government proposal to raise the retiring age of railwaymen. They were assured officially that there would be no change in regard to engine drivers, who retire at an early age. For other railwaymen a rise in the retiring age would be purely voluntary. If a man who was fit and strong desired to remain in active service, he would be allowed to do so.

#### Attempts at Sabotage

Some attempts at sabotage were made during the strike. One resulted in the derailment of the express from Calais to Basle at 10.30 p.m. on August 22, as it was running into the station at Berlaumont in the Nord département. A rail had been unbolted and the locomotive came to a standstill across the track, while the tender turned over and the luggage van and three passenger coaches left the rails. There were no fatalities. The driver was slightly injured and also some of the 200 passengers, mostly by light luggage falling from the racks. Generally, the express ran through Berlaumont at about 60 m.p.h., but it was stopping that night to pick up passengers for Nancy and had slowed down to about 25 m.p.h.

On August 20 a train of 18 coaches

carrying 1,000 passengers and hauled by an electric locomotive was nearing Toulouse on a journey from Narbonne when it narrowly escaped an attempt to wreck it. A large stone, weighing nearly seven pounds, was hung by a cord from the parapet of a bridge across the line. The stone, released as the train was passing at about 60 m.p.h., dropped into the cab, passed through a metal sheet five mm. thick, rebounded and struck the driver in the face. The train had only four more miles to run and, although seriously injured, the driver was able to bring it to a standstill at its destination.

## IRELAND

### G.N.R. Winter Timetables

The winter timetables of the G.N.R. came into operation on September 7. On the main line the 9 a.m. from Dublin now reaches Belfast at 12.5 p.m. and the 11 a.m. "Enterprise" at 1.15 p.m. The afternoon express leaves Dublin at 2.45 p.m. instead of 2.30 p.m., but is accelerated to arrive in Belfast at 6.10 p.m.; this express conveys through passengers to Londonderry via Portadown. The 6.20 p.m. express from Dublin gives connection to Clones and Enniskillen, and to Monaghan by G.N.R. road motor services from Castleblaney.

On Sundays, the midday train from Belfast to Dublin and the return train at 5 p.m. from Dublin to Belfast are discontinued, but there is a connection on Sundays by the 6 p.m. express to Londonderry and Enniskillen both via Portadown and Omagh. Services discontinued include the "Bundoran Express" from

Amiens Street; the only connection to this holiday resort from Dublin will be by the 9 a.m. express.

There are minor alterations in the local trains into and out of Dublin. The former 12.35 p.m. Dublin to Dundalk serving all intermediate station now leaves at 12.45 p.m., but reaches Dundalk at the same time.

### Dublin-Cork Winter Services

In the winter timetable of C.I.E. to operate from September 19, the 1.30 p.m. "Enterprise" from Dublin Amiens Street to Cork has been discontinued. This will mean that the through carriage working with the 10.30 a.m. Belfast to Dublin "Enterprise" of the G.N.R. and also in the reverse direction will come to an end, and the Belfast-Cork through service is therefore broken. The through steam working ended on June 29 when C.I.E. replaced the 1.30 p.m. "Enterprise" with a diesel train.

A slow train will run from Dublin Kingsbridge at 12.30 p.m. instead of the 1.30 p.m. Amiens Street to Cork. It is also announced that C.I.E. will introduce the first non-stop express from Dublin to Cork on September 19. It will leave Dublin Westland Row at 8.25 a.m. and be due in Cork at 11.45 a.m., in the reverse direction a non-stop diesel train will leave Cork at 6 p.m. arriving at Amiens Street at 9.16 p.m.

This is the first time that C.I.E. has provided a non-stop service on a scheduled run between Dublin and Cork. The G.N.R. "Enterprise" services between Dublin and Belfast in both directions will not be affected.

## Publications Received

### Fuel Utilisation in British Industry.—

Published by the British Productivity Council, 21, Tothill Street, London, S.W.1. Price 5s.—The productivity team which visited the U.S.A. in 1952 under the aegis of the British Productivity Council, to study the application and conservation of fuel, heat, and energy, with a view to improving the efficiency of fuel utilisation in British industry has issued its report under the title "Fuel Conservation." This points out that industry in U.S.A. generally reaches a higher level of efficiency than in Britain in the use of fuel and power. In the production or application of heat and power, American industrial practices are parallel with those of Britain; the outstanding difference is that American industry is quicker to adopt new methods and is bolder in scrapping inefficient plant. The team visited some 46 different firms representing a cross-section of industry in U.S.A., and expresses the view that the ambition of the worker to obtain a better standard of living permeates the whole fabric of life in the United States, and it is in this atmosphere that high productivity obtains, and flourishes. Diagrams and tables included in the report relate to various aspects of fuels consumed, electricity generated, and so on.

*Electric Resistance Heating.* London: British Electrical Development Association, 2, Savoy Hill, W.C.2. 9 in. x 5½ in. 182 pp. Illustrated. Price 9s.—The fifth in the "Electricity & Productivity" series is confined to the use of electricity for resistance heating, and affords a wide coverage of the subject. Starting with the theory of electric resistance heating and the types of elements which may be used, the treatise gives typical examples of electric heating equipment of every type, from large heat-treatment furnaces to electric soldering irons. Particular attention is paid throughout to the increase in production and economy attributed to the use of electric heating. There are 13 chapters, each covering one particular aspect of the subject, including thermal insulation, temperature control, electric resistance furnaces, electric ovens, and infra-red heating. The 170 illustrations in the publication are well reproduced; they include a large number of photographic prints well reproduced, besides line diagrams.

*Southern Region Belles.*—Particulars of four all-Pullman services of the Southern Region, the "Bournemouth Belle," the "Brighton Belle," the "Devon Belle," and the "Kentish Belle," are

given in four gaily printed leaflets issued by the department of the Regional Public Relations & Publicity Officer. Each is in its own colour, with a characteristic motif: music and steamers for Bournemouth (light blue); the Pavilion and beach spade for Brighton (yellow); cider and strawberries for Devon (red); and hops and an oast-house for Kent (green). The information given includes train timings. The cover in each case depicts a Pullman car, and bears a schematic diagram of the route.

*Automatic Control Equipment.*—With the formation of the British Thermostat Co. Ltd. in 1928, the Teddington group of companies has developed during the intervening years to what is said to be the largest undertaking in Europe devoted to the manufacture of automatic control equipment used in all phases of industry. The most recent illustrated booklet issued by the British Thermostat Co. Ltd. gives details of electric proportioning equipment Series ZA, consisting of a complete range of electrically operated proportioning valves, dampers, power units, and potentiometric controllers for the automatic regulation of heating, air-conditioning, and various industrial processes.

## Trial Runs with Southern Region Main-Line Diesel

*Observational runs on revenue-earning trains: analytical tests for fuel consumption and to ascertain transmission characteristics and efficiency*

THE results of dynamometer car tests of diesel locomotives rarely are made public; the interest, therefore, in the tests made between London and Exeter in the Southern Region of British Railways on which we commented briefly in our issue of August 28, with the 1,750-h.p. locomotive No. 10202 will be immediate for all concerned with diesel locomotives. This locomotive, and its fellow No. 10201, were described as of 1,600 b.h.p. in the official releases at the time of their completion in 1951, whereas British Railways Test Bulletin No. 9, from which the following particulars are abstracted, describes the locomotive as of 1,750 h.p.

observational runs on revenue-earning trains simply to obtain average performance and efficiency values in normal traffic; secondly, analytical tests to obtain fuel consumption related to d.b. pull and h.p., and to ascertain transmission characteristics and efficiency. The service tests were run over the whole 171½ miles from Waterloo to Exeter; the analytical tests were run over the 88-mile section of the above line between Salisbury and Exeter. In the first case the locomotive took what loads were offered by traffic, varying from 262 to 432 tons trailing. For the analytical tests the trailing load was varied from 390 to 61 tons to suit work-

was only 695. Drawbar thermal efficiency on this trip was 18.6 per cent for the whole run and 19 per cent for the time under power. The Bulletin states that the average d.b.h.p. on the service tests was 66 to 76 per cent of the d.b.h.p. while running on notch 8. A comparative graph gives the speed-tractive effort characteristics with the two sets of gear ratios, and shows that with the 17:65 reduction of the analytical tests the drawbar tractive effort was higher at all speeds up to 35 m.p.h.

### Analytical Tests

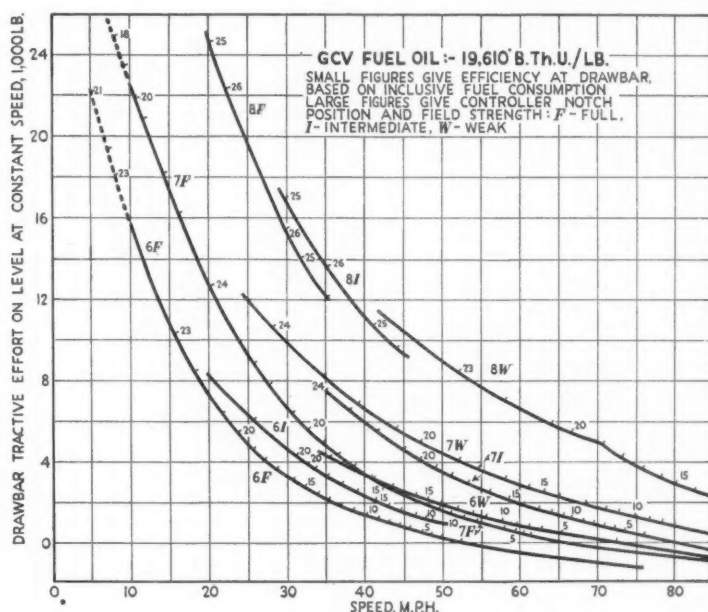
No curves are presented to show the efficiency of the electric transmission system, though main generator efficiency and characteristics are studied at length. Dynamometer car charts show that at an automatic changeover from notch 7 to notch 8, and at the transition from one stage of field weakening to another, a drop in drawbar pull and then a surge takes place before stable conditions are reached again. As with British Railways diesels Nos. 10000 and 10001, there is a big drop in power output between notch 7 and notch 8. This is about 350–500 h.p. at certain points; and, as the report says, this feature should be given considerable attention in the design of future locomotives so that the appreciable choice of notches available at the lower powers is extended up to full output, particularly if the present express passenger workings have to be supplemented by operation on loose-coupled freight trains.

### D.b.h.p. Values

Actual d.b.h.p. values recorded under notch 8 were very high, up to 1,300–1,325 d.b.h.p., or 75 per cent of the engine b.h.p. at speeds of 20–40 m.p.h.; 950 d.b.h.p. at 70 m.p.h.; and 600 at 81 m.p.h. Over the range of 1,200 to 1,300 d.b.h.p. at 20–40 m.p.h. on this notch the fuel consumption was 0.50–0.51 lb. per d.b.h.p. hr. On notch 7 the maximum possible d.b.h.p. was 800 at 25 m.p.h. at 0.52 lb. per d.b.h.p. hr. with fuel of 19,600 B.Th.U. per lb. gross calorific value; this fuel cost 1.63d. to 1.69d. per lb. at the time of the tests in 1952.

### Generator Output

The maximum measured output of the main generator on weak field of notch 8 was 1,145 kW, 635 V, 1,803 amp., at 42 m.p.h. This corresponded to 1,690 b.h.p. main generator input, and fuel consumption was 10.417 lb. per b.h.p. hr. both intermediate field on notch 8, and 1,106 kW main generator output, and fuel consumption for the corresponding 1,632-b.h.p. engine output was 0.387 lb. per 1.h.p. hr., or 33.4 per cent thermal efficiency of the engine alone.



*Drawbar tractive effort characteristics with efficiencies*

These two locomotives of 1-Co—Co-1 wheel arrangement each weighs 135 tons in full working order, of which 109.8 tons is adhesion weight. The maximum designed starting effort of 48,000 lb., meaning a factor of adhesion of 5.1, can be maintained up to 8½ m.p.h.; continuous rating is 21,700 lb. at 24½ m.p.h. The 3-ft 7-in. wheels are spread over a rigid wheel-base of 55 ft. 6 in. Power is provided by an English Electric 16-cylinder pressure-charged V engine of 165 VT/1 type, set to give 1,750 b.h.p. at 750 r.p.m. and driving an E.E. generator of 1,155 kW capacity. The six nose-suspended traction motors have single reduction gearing of 17:65 ratio, but on the first series of tests, known as the service trials, a ratio of 21:52 was used.

The tests were in two parts: first,

ing on different controller notches. At the beginning of the service tests the locomotive had run 89,270 miles in nine months and the oil engine had been given no overhaul. When the analytical tests were begun the mileage was 130,310, but meantime the oil engine had been given a medium overhaul at 100,880 miles.

### Performance on Service Trials

Service tests showed results which need careful study checked against the gradient profile and against the end-to-end schedule of 222 min. for the 171½ miles inclusive of six intermediate stops. For example, on one run power was "on" for 157½ miles, and the schedule required the use of notch No. 8, the highest, for 75 per cent of the time under power. Yet the average d.b.h.p.



## British Railways Class "7" Locomotive Tests—1

*Comprehensive tests of the first British Railways standard locomotive, developing at the Rugby Testing Station a maximum of 2,200 i.h.p. when the steam supply to the engine averaged 31,600 lb. per hr.*

By E. C. Poultney, O.B.E.

THE new Pacific type standard class "7" locomotives, first introduced for mixed traffic services on British Railways in 1951, form the subject of Bulletin No. 5, recently issued by the Railway Executive. The test report, in common with those previously issued, Nos. 1, 2, 3, and 4 (see *The Railway Gazette* for October 10, 17 and 24, 1952), has been prepared by the Locomotive Testing Committee under the direction of Mr. R. A. Riddles, Member, Mechanical & Electrical Engineering, Railway Executive, and presents remarkably complete performance data concerning the largest and most powerful steam locomotive which has so far formed the subject of the test report bulletins published by the Railway Executive.

### Features of Design

The 4-6-2 design was the first of the projected British Railways standard locomotives to be completed. The purpose of the class is mixed traffic services with a wide route availability and suitability for working passenger trains such as are now operated by the former L.M.S.R. 4-6-0 "Royal Scot" class, the former L.N.E.R. 2-6-2 class "V2," and the 4-6-0 "Castle" class locomotives of the former G.W.R. The principal features of the class "7" design include a large boiler having a tapered barrel section with a wide firebox of the Belpaire pattern, a rocking grate and hopper ashpan and a self-cleaning smokebox.

The main framing of the engine is of the Bulleid pattern as used for the former S.R. Pacifics. Roller-bearing journal boxes are used for the coupled axles. The piston rod crossheads are of a light underhung design, running in three bar guides. The outside cylinders are steel casting with liners of cast iron, and the steam distribution is effected by 11 in. dia. piston valves, actuated by Walschaerts valve gear. A feature of the design is the large superheater provided, which has a heating surface equal to 22.5 per cent of the combined total heating surfaces.

Feed water supply is provided by a Davies & Metcalfe exhaust steam injector and a live steam injector of the Western Region pattern, both delivering through top feed fittings. These class "7" engines may have two different tenders of six-wheel type; both have a coal capacity of seven tons and tanks of either 4,250 or 5,000 Imp. gallons capacity. These are respectively types B.R.1 and B.R.1.A., weighing, when full, 49.15 and 52.5 tons respectively. The engine only weight is 94 tons, of which 60.75 tons ranks for ad-

hesion, giving, with a rated tractive force of 32,150 lb. an adhesive factor of 4.23.

### Leading Dimensions

Cylinders (2)	...	20 in. dia. by 28 in. stroke
Driving wheels, dia.	...	74 in.
Boiler steam pressure	...	250 lb. per sq. in.
Boiler, inside dia.	...	69 in. increasing to 77.5 in.
Tubes, No. 136	...	2½ in. dia. outs.
Flues, No. 40	...	5½ in. dia. outs.
Length between tube plates	...	17 ft.
Heating surfaces —		
Tubes and flues	...	2,264 sq. ft.
Firebox	...	210 " "
Evaporative	...	2,474 " "
Superheater	...	718 " "
Combined	...	3,192 " "
Grate area	...	42 sq. ft.
Gas area, tubes and flues	...	6.8 sq. ft.
Firebox heating surface/grate area	...	5
Evap. heat. surface/grate area	...	58.9
Comb. heat. surface/grate area	...	76
Gas area tubes and flues/grate area	...	16.2 per cent.

### Grades of Coal Used

As in the case of the previous trials, different kinds of coal were used, having for the tests under review characteristics as follow:—

<b>South Kirkby:—</b>			
Calorific value			
B.Th.U. per lb.	...	13,800 as received	
"	...	14,256 dry	
From and At evaporative value,			
lb water per lb. of coal	...	14.23 as received	
"	...	14.67 dry	
Proximate analysis	...	As received	Dry
Moisture, per cent	...	3.24	—
Volatile matter, less moisture, per cent	...	34.71	35.87
Fixed carbon, per cent	...	57.38	59.30
Ash, per cent	...	4.67	4.83
Total sulphur, per cent	...	1.15	1.19
<b>Blidworth:—</b>			
Calorific value			
B.Th.U. per lb.	...	12,600 as received	
"	...	13,710 dry	
From and At evaporative value,			
lb. water per lb. of coal	...	12.99 as received	
"	...	14.13 dry	
Proximate analysis	...	As received	Dry
Moisture, per cent	...	8.14	—
Volatile matter, less moisture, per cent	...	32.62	35.50
Fixed carbon, per cent	...	53.84	58.62
Ash, per cent	...	5.40	5.88
Total sulphur, per cent	...	0.76	0.83

### Test Procedure

The trials carried out with the class "7" standard locomotive No. 70005 consisted of a series of tests on the testing plant at Rugby, supplemented by controlled road tests made between Carlisle and Skipton over the Settle and Carlisle section of the old Midland main line. The general method of making both series of tests was as followed in the case of similar tests previously carried out by the Railway Executive, described in *The Railway Gazette*, October 10, 17, and 24, 1952 issues, when test report Bulletins Nos. 1, 2, and 3 were discussed, appertaining to the trials conducted with the E. & N.E.R. 4-6-0 class "B1," the W.R. 4-6-0 "Hall" class, and the L.M.R. 2-6-0 class "4" engines.

Compared however with the two latter engines, indicator diagrams were not taken during the road tests with the class "7" Pacific; further diagrams taken when under test at Rugby were obtained by using the normal pattern of piston indicator and also with a modified form of the Farnboro pattern. The test bulletin No. 6 contains reproductions of a selection of diagrams obtained with this instrument. These, while no doubt ingenious, do not appear to lend themselves particularly well to locomotive requirements, it being difficult, for instance, to define even approximately points of cut-off, and they do not indicate steamchest pressure conditions.

On the plant at Rugby, the range of tests carried out covered speeds from 20 to 75 m.p.h., the latter being for all practical purposes "diameter speed," and at cut-offs varying from 15 to 50 per cent. The feed-water rates extended from under 10,000 to upwards of 30,000 lb. per hour. Full regulator opening was generally used. The engine No. 70005 is one of the second series turned out by the Crewe Works and had run 540 miles before going to the Rugby Testing Station. Check tests were made with a similar engine, No. 70025. Engine No. 70005 forms the subject of test report bulletin No. 6.

### Noteworthy Performance

When developing the high power of 2,125 i.h.p. on the testing plant, attained at 65 m.p.h., the cut-off was about 34 per cent, the steam delivered to the engines being 30,000 lb. per hour, and the tank water evaporated 28,590 lb. At this rate of cylinder feed, and when South Kirkby coal was fired, the admission steam had a temperature of just over 700° F. and carried 300° of superheat. The maximum evaporation (tank water) lb. per hour reached on the Rugby plant and according to the diagrams presented with the test report was 30,200 lb. per hour when the actual steam produced, including the exhaust steam injector, was 31,600 lb. per hour equal to 12.81 lb. per sq. ft. of evaporative heating surface per hour.

The coal (South Kirkby) fired amounted to 4,320 lb. per hour at the above evaporative rates, or 102.8 lb. per sq. ft. of grate area per hour. On the road, higher rates of working were attained on an up run from Carlisle to Skipton with a load equivalent to 850 tons behind the tender. During this journey and for a period of 30 minutes, the water rate, feed from tender, averaged 36,150 lb. per hour and the firing rate 5,600 lb. of coal per hour, corresponding to 14.59 lb. of water

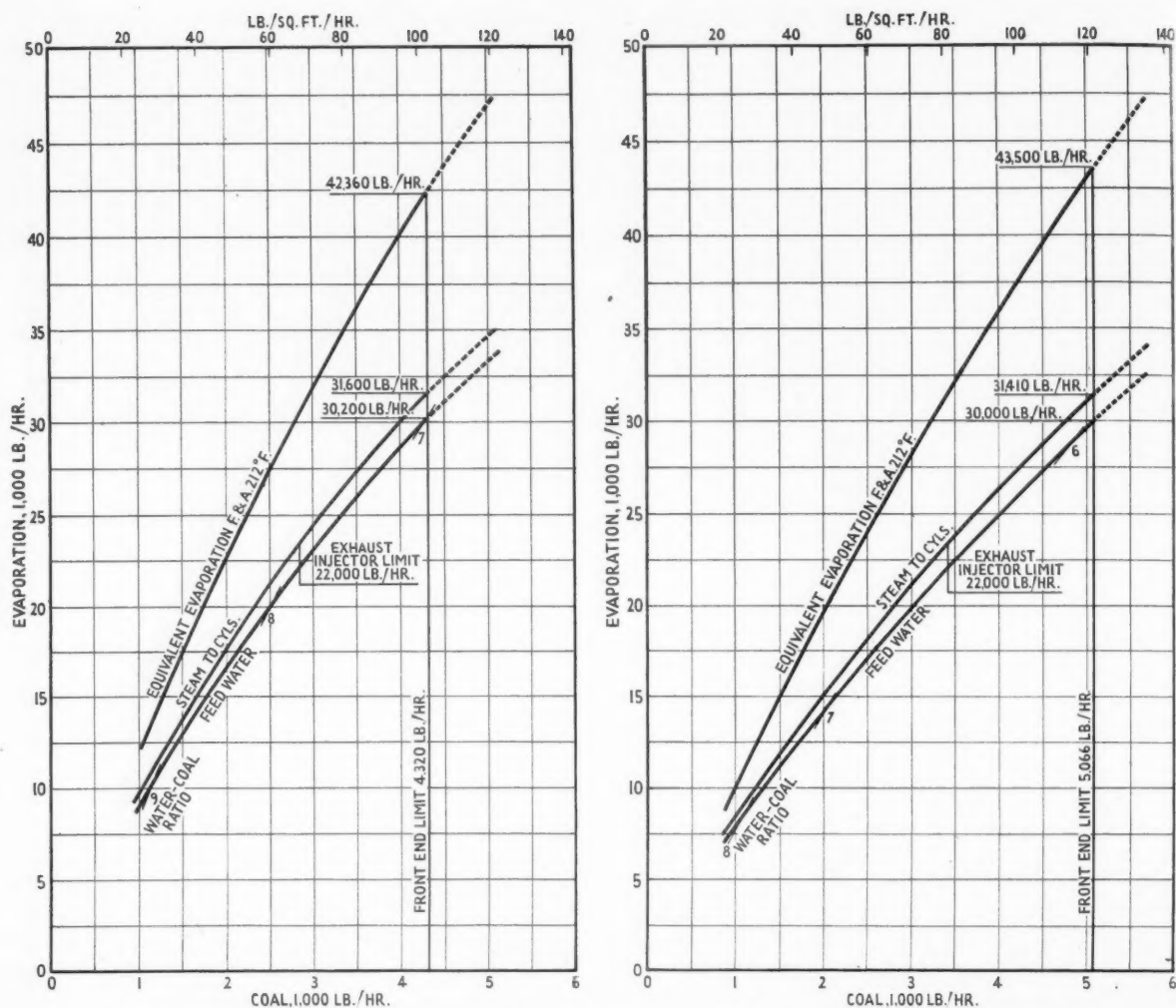


Fig. 1—Evaporation and relative rates of firing with South Kirkby coal (left) and Blidworth coal (right)

evaporated per sq. ft. of heating surface per hour and a rate of firing of 133 lb. of coal per sq. ft. of grate area per hour. The water coal ratio was 6.5 lb. This is a very high rate of working well beyond the capacity of one fireman.

From the form of the plots showing steam production in relation to the coal fired, it would seem that, so far as the

present tests are concerned, capacity operation was not by any means reached and that, should such a rate of working be required, a mechanical stoker would be necessary.

However, the test range covered by the report embraces in a practical and interesting manner the specific intended requirements as dictated by the class

of traffic for which these engines have been designed and built.

When considering the performance of the locomotive, attention is in the first place directed to the boiler, and the plot, Fig. 1, gives the evaporations attained and the relative rates of firing when both South Kirkby and Blidworth fuels are being used. In the case of the

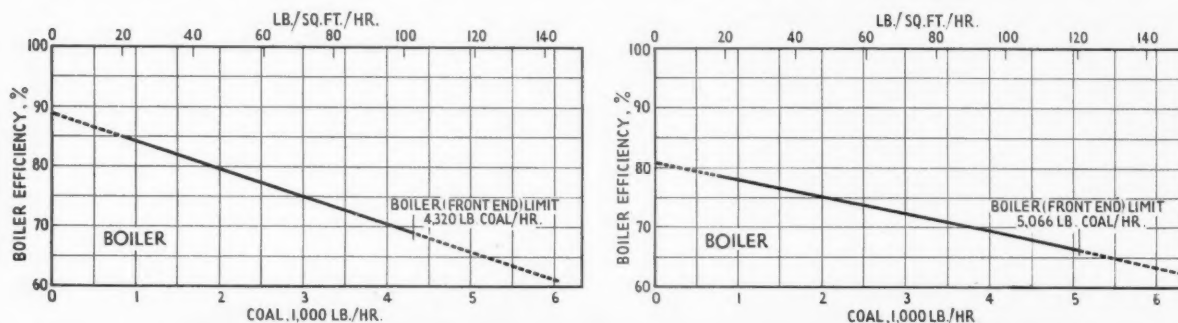


Fig. 2—Combustion and boiler efficiency plotted against firing rates for South Kirkby coal (left) and Blidworth coal (right)

South Kirkby coal, the maximum sustained firing rate was 4,320 lb. of coal per hour, equal to 102.8 lb. per sq. ft. of grate area per hour; and for Blidworth coal, the firing rates are respectively 5,066 lb. and 120.8 lb. per hour. The equivalent evaporations at these rates of firing are respectively 42,360 lb. and 43,500 lb.

The heat output of the boiler is directly proportional to the equivalent evaporations attained, which is seen to be practically the same for each kind of coal, the difference being in the relative amount of coal required, due to the heat values of the coal, the efficiency of combustion and the boiler efficiencies. This latter information is given in Fig. 2, and here also the efficiency is shown for both kinds of coal, plotted against hourly firing rates, and also per sq. ft. of grate area per hour.

(To be continued)



Class "7" standard locomotive No. 70005 on test at Rugby testing station

## Portable Grinding Equipment

*For correcting inaccuracies  
in dies and forming tools*

**I**NCREASING use is being made by railway workshops and also by rolling stock manufacturers of drop stamps and press tools for producing break gear components and other details for locomotives, carriages, and wagons which entails the use of dies and forming tools.

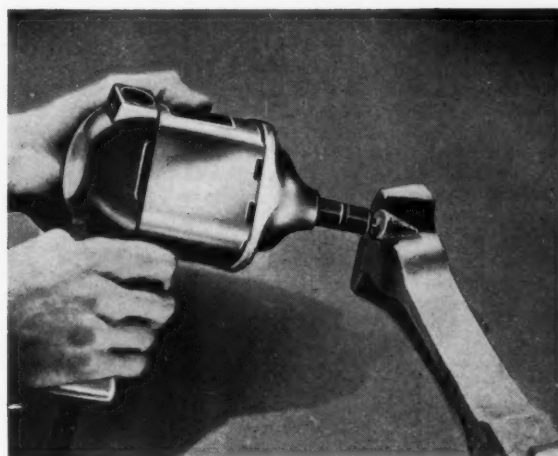
be mounted to a bench clampstand for stationary use.

### Features of Design

The driving unit which possesses ample speed and power, has a capacity for grinding wheels up to  $1\frac{1}{2}$  in. dia. by  $\frac{1}{8}$  in. wide, and has a periphery speed

out, and the double pole switch is of ample capacity and fitted with a retaining button. Armature and field windings are enamelled and double silk covered copper wire. The armatures are dynamically balanced electronically to precision limits.

The complete equipment includes a



Rectifying the radius of a press tool (left) with a Wolf D.G.1. portable die grinder. The illustration on the right shows the contour of a forging dressed with a coned rotary file

To correct inaccuracies in this type of equipment Wolf Electric Tools Limited, has recently included among its range of portable electrically operated grinders a new type known as D.G.1, which, while primarily intended as a portable unit, can with advantage

of 16,000 r.p.m. The input on full load is 270 W. and the net weight of the machine is 5 lb.

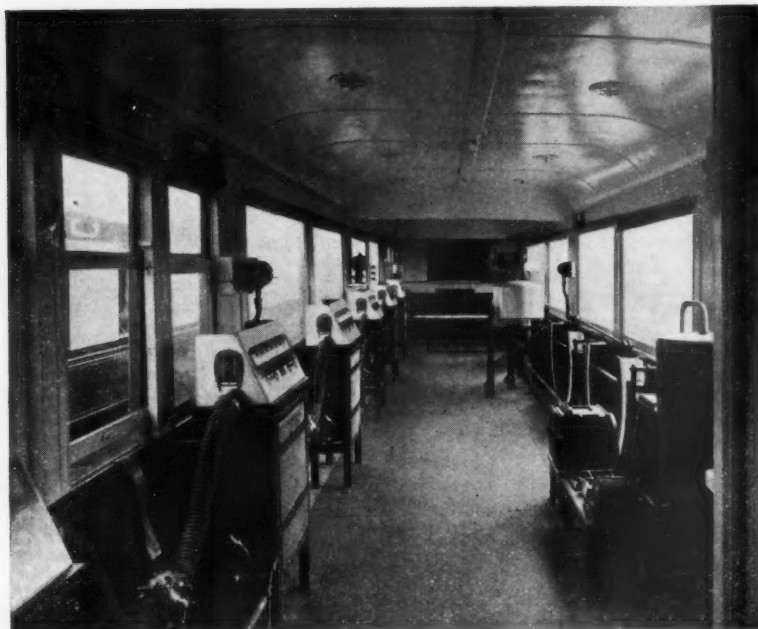
The motor frame, which is of high-tensile aluminium alloy, is finished in polychromatic stove enamel. Dust sealed ball bearings are used through-

specially designed steel carrying case with 10 ft. of three-core cable, a spare set of carbon brushes, a set of mounted points, grinding wheels, felt bobs and arbours. Rotary files and milling cutters for use on non-ferrous metals are available for special requirements.



## Mobile Vacuum Brake Instruction Unit

*For providing refresher courses for carriage and wagon staff of the Eastern and North Eastern Regions, British Railways*



*Interior view of the inspection car showing the layout of the equipment*

**I**N order that members of the carriage & wagon examining staff at the various out-depots of the Eastern and North Eastern Regions may attend refresher courses under the guidance of a competent instructor, the Carriage & Wagon Engineer, Eastern and North Eastern Regions, Doncaster, has recently installed in a converted 49-ft. bogie saloon coach equipment and working models of the automatic vacuum brake.

It was considered it would be more advantageous to provide such facilities for lecturing to the staff in preference to bringing them from a wide area to a particular works for a course of interim training.

At one end of the coach the interior is equipped with seating and blackboard for lecturing purposes, or use of lantern slides. The other end has accommodation for washing and toilet facilities. The rest of the interior is taken up by working models and exhibits of the automatic vacuum brake as fitted to all types of coaching stock.

### Demonstration Equipment

For demonstration purposes an electrically-operated vacuum exhaustor is installed to operate working models, making it possible to demonstrate all aspects of the automatic brake, such as release valves, passenger communication apparatus and guard's application valve.

A unique model represents a train consisting of a locomotive and six coaches. Although the coaches are

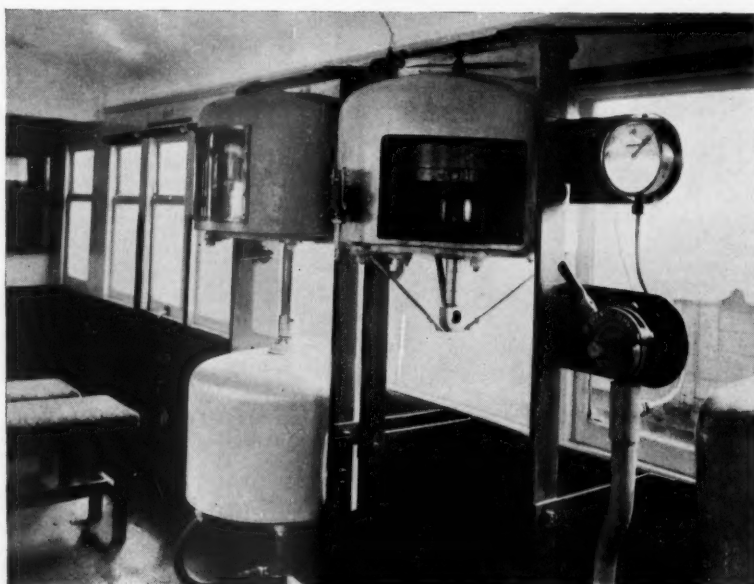
necessarily only diagrammatic, reservoirs fitted below are the actual capacity of the train pipe. The vacuum hosepipes, couplings, passenger communication apparatus and guard's application valve are as used in service. With this new departure the instructor is able to create defects or air leaks at will to test the examiner's ability in finding and

rectifying them, thus examiners gain experience in the quick location of defects under traffic conditions and thereby learn to save valuable time.

Other models include a full-scale working model of an automatic vacuum brake of the type fitted to bogie coaching stock, and full-size vacuum brake cylinders of the rolling ring and standard sliding-band types sectioned to expose interior details. The interior is steam-heated and the underframe carries the usual batteries and dynamo. The lighting installation includes a horizontally-opposed twin-cylinder petrol engine driving an electric generator for battery charging, so that long periods of standing have no effect on the batteries.

**IRON & STEEL BOARD: CHANGE OF TELEPHONE NUMBER.**—The Iron & Steel Board telephone number now is Trafalgar 8833. Access to the Board offices at Norfolk House temporarily is through the entrance in 30, Charles II Street, off Lower Regent Street. The address remains unchanged.

**WITHDRAWAL OF FREIGHT TRAIN SERVICES FROM MEIKLE EARNOCK — STRATHAVON NORTH LINE.**—British Railways, Scottish Region, announce that from September 21 the freight train service will be withdrawn from beyond High Blantyre to Strathaven North, involving the closing of Townhill Public Siding, Meikle Earnock, Quarter, Glassford, and Strathaven North Goods Depots. Alternative rail facilities are available at Hamilton Central for Townhill Public Siding, Meikle Earnock and Quarter, and traffic for Glassford and Strathaven North will be dealt with at Strathaven Central.



*Vacuum equipment. The cylinder on the left is an 18-in. roller ring type, that on the right an 18-in. sliding band type*

## Lightweight Coaches for the Peruvian Corporation

*Of welded, integral construction, the longitudes are capable of withstanding buffing loads of 100 tons*

**C**RAVENS Railway Carriage & Wagon Co. Ltd., has recently supplied 21 lightweight coaches to the Peruvian Corporation Limited for operation on the Central and Southern Railways of Peru. These coaches have been designed and constructed to the approval and inspection of the Consulting Engineers, Messrs. Livesey & Henderson, and include first class, second class, first class kitchen and baggage and postal cars. Numerous sharp curves and severe gradients due to the mountainous country in which these railways are situated restrict the total load which can be hauled by the steam locomotives and it was therefore a specified requirement of the Corporation, when this new stock was ordered, that the tare weight should be kept to a minimum.

It was calculated that if the new coaches could be designed with a maximum tare weight of 19 tons the existing five-car trains would be replaced by trains of six lightweight coaches thus increasing the carrying capacity and consequently the pay load of the train. By adopting an integral all-steel welded design and disposing of the various steel members where their strength could be utilised to the greatest possible extent, it was found that the coaches could be built to come within the specified tare weight without using the more expensive light-alloy extrusions for the framing members.

### Principal Dimensions

The principal dimensions and tare weights of the different types of coaches are given below, and it will be noted that the second class coaches with a seating capacity of 94 passengers weigh only 18 tons 9 cwt. as compared with

a 25-ton tare weight of existing coaches of similar capacity, a saving of 6 tons 11 cwt. or 26.4 per cent. Similar comparison of the weights for the first class cars gives an even greater saving, which in this case is 28.6 per cent.

The leading particulars are as follow:—

Length over headstocks ...	59 ft.
Width over body panels ...	9 ft.
Height from rail ...	11 ft. 9 in.
Centres of bogies ...	40 ft. 6 in.
Bogie wheelbase ...	7 ft.
Gauge ...	4 ft. 8½ in.

Type of carriage	Tare weight
1st class carriages, seating capacity 68 passengers ...	18 tons 15 cwt.
2nd class carriages, seating capacity 94 passengers ...	18 " 9 "
1st class carriages and kitchen car, seating capacity 46 passengers ...	19 " 14 "
Baggage and postal car, payload, 10,000 kilos (10 tons) ...	18 " 12 "

### Carriage Design

The steel shells of the four types of coach are of similar construction, the chief variation being in the baggage car where additional framing members are incorporated on account of the large doorway openings. The body side framing consists of ½ in. steel cold formed sections electric arc welded together to form a complete unit, the longitudinal members being of Corten low-alloy corrosion resisting steel.

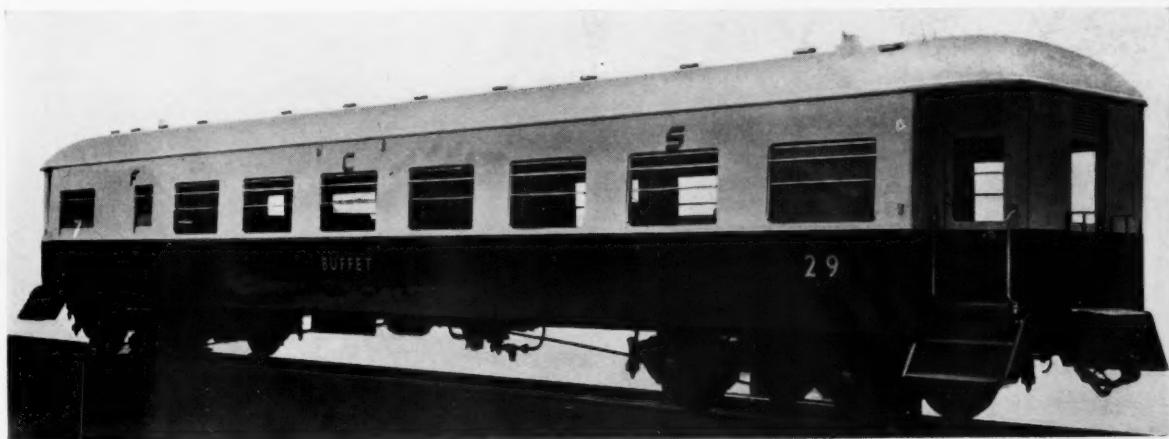
A complete body side panel, including window pans, is built up from 16 gauge steel sheets by means of carbon arc welding on a semi-automatic machine. The panel is secured to the body framing sub-assembly by means of electric arc stitch welding. This welding is carried out on a cast-iron faced skinning jig, specially designed to

minimise distortion and buckling of the panelling.

The roof framing, which is built up in an assembly jig, consists of 14 gauge continuous carlines and interposed purlins, with ½ in. side members, and is completely welded. The galvanised roof sheets of 16 gauge are then strapped in position and are secured by button welding to the framing. The butt joints are continuous seam welded to form a weather-proof joint. The side member of the underframe unit is a curved ½ in. thick plate which is flush welded to the body side panel on assembly to form a combined solebar and side skirting. Crossbars, which are gusseted into this member, are designed to transmit all floor loads to the bodyside girder. They consist of two members, a ½ in. pressing running over the channel section centre longitudes and a rolled angle below, such that both crossbars and longitudes are continuous; a construction which simplifies production and jig location of these items.

The longitudes are placed in line with the couplers and are capable of withstanding, as columns restrained by the crossbars, a buffing load of 100 tons. The coupler anchorage was designed on this figure so that by virtue of the total end load carrying capacity of the structure in longitudes and side girders, damage from a shock load much greater than this nominal buff would be confined to the ends of the frame. Underframe bolsters and end-frame assemblies are designed for weight-strength efficiency and are fabricated from flanged mild steel plates electrically welded to form box sections.

The 18 gauge galvanised floor sheets are secured to the crossbars by deep penetration spot welding with the dove-



*First class and buffet car built by Cravens Railway Carriage & Wagon Co. Ltd. for the Peruvian Corporation Limited, for operating on the standard-gauge Southern Railway of Peru*

tail section corrugations running along the frame to add to the longitudinal stiffness. Corten steel is used extensively for the underframe members in addition to the body framing members referred to previously, so as to provide a structure which will be corrosion resisting and have a high factor of safety.

### Testing of Structure

A theoretical stress analysis of a structure of this nature, however involved, is based on certain assumptions and the accuracy of the figures obtained depends on the validity of these assumptions. Although the design was developed and calculated on the most thorough lines a full practical stress analysis by electrical strain gauging was carried out on a completed body shell, to prove the design and production methods and to obtain information helpful to further development of light-weight stock.

The body shell was first tested under a vertical distributed load of 18 tons, which represents an overload of 100 per cent of the normal passenger loading plus the weight of interior finish and seats. A special testing rig was also constructed for testing the structure under a compression load applied at the centre couplers. This load was applied by means of a hydraulic jack and the resulting strain in the structure under varying compression loads, with and without the vertical loadings previously referred to, was recorded.

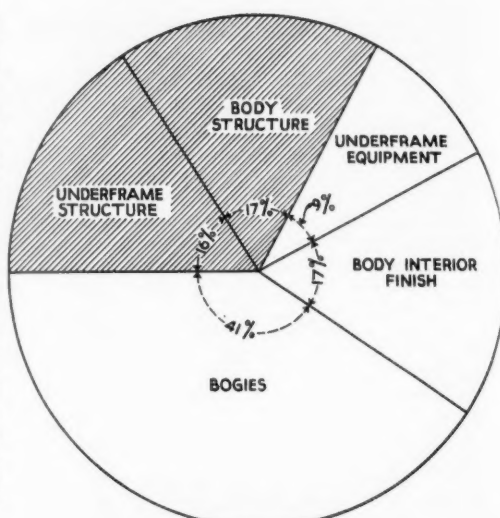
It was found that the calculated stresses were not exceeded by the actual stresses resulting from these tests and the vertical deflection at the centre line of the car under maximum

vertical loading, was only  $\frac{3}{8}$  in., thus proving that the light-weight construction adopted was suitable for the loads and conditions which these vehicles would be subjected to when in service. The bogies are of conventional swing bolster type, having double helical bolster springs and laminated side springs over roller-bearing axleboxes. The bogie frames are built up of robust sections to cope with the severe service conditions and consist of stress-relieved welded sub-assemblies with riveted connections at the crossbars and corners. Roller side-bearers and trunnion mounted axle-box guides are incorporated in the bogie design to cater for the excessive movement of the bogie on the frequent curves.

### Standard Wheels and Axles

Peruvian standard wheels, axles, brake blocks and so on, are fitted to facilitate servicing, consequently the saving in weight on the bogie has been restricted. This is reflected in the percentages indicated in the accompanying weight distribution diagram; it will be noted that bogies actually account for 41 per cent of the total tare weight of the coaches. The coupling gear consists of Alliance automatic couplers with rubber-sprung draft gear and with safety chains on either side.

Westinghouse P.M.S. type air brake,



Weight distribution diagram

giving straight control and automatic brake operation and also air signal equipment are incorporated. Each car has a 10 in. diameter brake cylinder with an air-operated automatic slack adjuster and the brake rigging is arranged to give a brake power of 90 per cent tare through double blocks on all wheels.

Handbrake gear operated from inside the car acts through the same rigging to provide similar braking power. Low-voltage batteries are carried in the underframe for emergency lighting, the main lighting being from a 110 V d.c. supply fed from a generator on the locomotive. All wiring is housed in aluminium conduit.



Electrical strain gauge tests being carried out on a completed body shell



The coaches are insulated by Limpet asbestos applied with emulsion binder to the whole of the interior surface of the body shell after preparation with aluminium in varnish. Slots are provided in framing members and packings to permit free air flow through the space between this insulation and the interior plywood panelling to extractors on the roof. The extractors also ventilate the interiors, and in the saloons the centre section of the ceiling is set down to provide an air extraction duct.

### Interior Design

The first and second class coaches have interior panelling of  $\frac{3}{8}$  in. plywood with the joints carefully placed such that the thin aluminium covering moulds give pleasing lines without detracting from the smooth interior profile. The length of the saloons is emphasised by the dropped centre ceiling, and continuous parcel racks which run the full length of the body-sides.

Floor covering in the saloons and toilets in  $\frac{1}{8}$  in. thick sheet rubber laid on cork. It is a patterned green, to tone with the interior colour scheme and strips of dark green are inlaid to mask joints and give a panelled effect down the centre gangway. The cork is cemented to the steel corrugated floor and skimmed over with latex cement to form a secure base for the rubber.

Seats are of the back-to-back type with tubular steel frames with foam rubber cushions and rubberised hair back squabs. First class seats have arm rests and are trimmed in green hide and second class seats are trimmed in green Vynide. Detachable tables with plastic veneered tops are fitted in the first class saloons only.

Windows are of the half-drop type with  $\frac{3}{8}$  in. thick toughened glass and polished aluminium framing; the whole assembly being resiliently mounted in a steel pan which forms part of the exterior sheeting. Spring roller blinds are fitted with the rollers mounted behind the panels over the windows. Toilet compartments are provided in all stock and have white glazed washbasins and hoppers and matt silver finish fittings. The toilets of the first class coaches are lined with green onyx Formica and those in the other coaches are painted white.

Water tanks and piping are concealed and a corner cupboard houses the filter, cup-dispenser and used-cup locker. The drinking water font is flush mounted on the saloon side of the toilet partition.

### Refreshment Service

Dining facilities will be, in effect, a buffet service and the kitchen cars are equipped accordingly. The layout and finish of the passenger end of these cars follows the first class saloons with the introduction of a dividing partition with swing door to provide a distinction between reserved and unreserved seats. A buffet compartment adjoins the saloon with a plastic-top service

counter set across the coach and a side corridor past buffet and kitchen compartments.

The buffet is equipped with an ice chest, a drinking water filter, crockery, bottle and glass racks, shelves and drawers. It has a hinged entrance door from the corridor and a sliding door into the kitchen. The kitchen has a cooker, cook's table, sink unit and food storage cupboards and full use is made of remaining space for cooking utensils, cutlery and crockery stowage.

The cooking unit of the Southern Railway car is a gravity-fed oil fired range. The Central Railway cars have gas stoves with gas storage cylinders housed in the underframe. Metal

in the form of sliding end doors, hinged foot plates and fixed guard rails.

### Exterior Finish

The exterior surface of the coaches is flush throughout with only paint lines introduced at waist levels for dividing the finishing colours. The two railways have different colour schemes; the Southern Railway coaches are mid-brunswick green below waist, pale cream above with roof aluminium, while traffic green, sea green and slate grey are considered more serviceable for the smoky conditions of the Central Railway.

Internally, all passenger compart-



*The interior of the baggage car showing the construction of the shell*

lockers are provided in the underframes for storage of vegetables and kitchen provisions.

The floors of buffet and kitchen compartments are covered with lino as preferable to rubber for the greasy conditions which may be encountered. The baggage and postal cars have floors consisting of hardwood wearing strips on  $\frac{1}{8}$  in. plywood secured to the corrugated steel base. The baggage compartment has two large doorways each side with top-hung outside sliding doors. It contains a fire resisting bulion safe and two desks with fixed stools.

All the windows and lights are barred for protection and security, as are those of the partitioned off postal compartment. This compartment is furnished with sorting table, stools, shelves and letter racks.

All the coaches have set-back entrances, situated at the ends, with fixed steps for access from low platform or track level and with hinged doors opening on to vestibules. Intercoach communication for train staff is provided

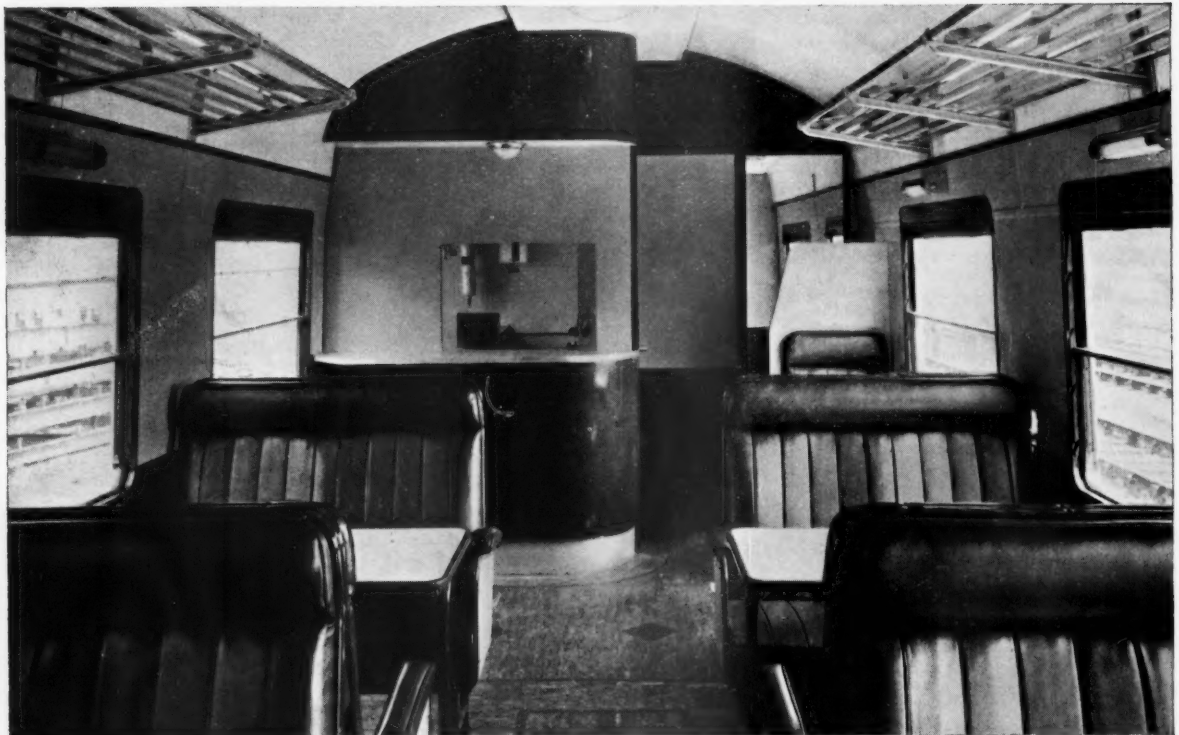
in the form of sliding end doors, hinged foot plates and fixed guard rails. Kitchen and buffet compartments are painted white and the interior finish of the baggage and postal cars is light brown walls with white ceiling and dark brown furniture. The suppliers of materials and fittings include:—

Appleby-Frodingham Steel Co. Ltd.	Corten plates
Beckett Laycock & Watkinson Limited	Typhoon Major windows
British Timken Limited	Axleboxes
Dunlop Rubber Co. Ltd.	Dunlopillo cushions
English Steel Corporation Limited	Alliance couplers
G. D. Peters & Co. Ltd.	Seat frames
George Spencer, Moulton & Co. Ltd.	Rubber draft springs
Imperial Chemical Industries Limited	Dulux paints and Vynide
J. Stone & Co. (Deptford) Ltd.	Electrical installation
Lightalloys Limited	Alpac doors
Monarch Controller Co. Ltd.	Monarch ventilators
Owen & Dyson Limited	Wheels and axles
Saro Laminated Wood Products Limited	Plywood and blockboard
Self Priming Pump & Engineering Co. Ltd.	Patent split brake bushes
Semtex Limited	Rubber flooring
Westinghouse Air Brake Company of America	Air brake equipment
J. W. Roberts Limited	Limpet asbestos
Thomas De La Rue & Co. Ltd.	Formica

## Lightweight Coaches for the Peruvian Corporation



*Interior of the first class saloon, showing the arrangement of seating*



*Interior of the kitchen car looking towards the buffet*

## RAILWAY NEWS SECTION

## PERSONAL

Mr. R. A. Riddles, Member, Railway Executive (Mechanical & Electrical Engineering) and formerly a Vice-President of the L.M.S.R., is to retire from the railway service on September 30, 1953. A letter addressed to Mr. Riddles by the Minister of Transport, Mr. Alan Lennox-Boyd, is reproduced on page 304 of this issue.

ping and subsequently served on Government committees dealing with labour at the ports. In May, 1940, he joined the Ministry of Shipping as adviser on all matters relating to coal, and was appointed Minister of War Transport the following year. He is an underwriting member of Lloyd's, a Warden of the Company of Shipwrights, and a Member of the Court of the Company of Watermen & Lightermen. His barony was gazetted in 1941.

Quay Railway and Eastern Suburb Railway.

We regret to record the death on August 18, in his 73rd year, of Mr. James Williamson, C.B.E., senior member of the firm of James Williamson & Partners. Mr. Williamson, who was born on April 5, 1881, was educated at Uddingston Grammar School, the Royal Technical College and Glasgow University. After



*Lord Leathers*

Secretary of State for the Co-ordination of Transport, Fuel & Power, 1951-53



*The Hon. C. E. Martin*

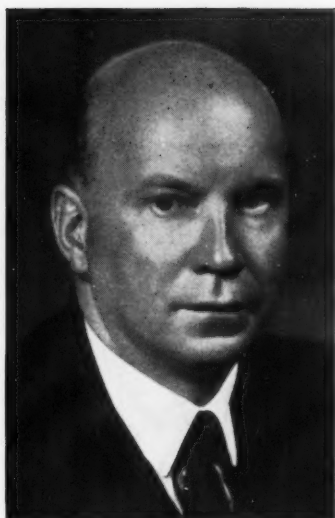
Minister for Transport, New South Wales

Lord Leathers, P.C., C.H., LL.D.(Hon.), M.Inst.T.(Hon.), Secretary of State for the Co-ordination of Transport, Fuel & Power, who resigned on September 4, was Minister of War Transport between 1941-45. He was born in 1883, and at the age of 15 entered the offices of the Steamship Owners' Coal Association, which in 1913 was merged into the business of Wm. Cory & Son Ltd.; he subsequently became Chairman of that firm and of many Cory subsidiary companies. Consequent on his appointment as Secretary of State for the Co-ordination of Transport, Fuel & Power in 1951, Lord Leathers resigned his chairmanship and the directorships mentioned above. He has been a Director of Westminster Bank Limited, Tunnel Portland Cement Co. Ltd., Guardian Assurance Co. Ltd., Peninsular & Oriental Steam Navigation Company, British India Steam Navigation Co. Ltd., Union Corporation Limited, and Bay Hall Trust Limited. During the 1914-18 war he was associated with the Ministry of Ship-

The Hon. C. E. Martin, Q.C., M.E.C., LL.B., M.L.A., who was appointed Minister for Transport, New South Wales, in February of this year, has been a Minister of the Crown in that State since 1941. From 1941 until February, 1953, Mr. Martin was Attorney General, a record term of office in the English-speaking world. Mr. Martin was on active service during the 1939-45 war in the New Guinea area and was discharged with the rank of Major. When the portfolios of the N.S.W. Cabinet were re-allocated in February, 1953, Mr. Martin went to the Ministry of Transport. His administration includes the New South Wales Government Railways, the Government tram and bus services, main roads and the control of private motor transport as well as the Government ferries now operating on Sydney Harbour. Since February, Mr. Martin has made a close survey of all forms of transport in New South Wales. He is particularly interested in the completion and development of the underground railways in Sydney, especially the Circular

a four-year apprenticeship with the Engineer to the Middle Ward of the County of Lanark he joined the firm of Formans & McCall as an assistant engineer, becoming Chief Assistant in 1907. During the latter period he was largely engaged in railway construction work, including the building of the Lanarkshire & Ayrshire extension lines of the Caledonian Railway, surveys of that railway and of the Paisley & Barrhead railway, and work on gravity marshalling sidings on the Clydebank Dock Branch Railway. He later prepared plans for the Dingwall & Cromarty Light Railway and, in 1913, again with Formans & McCall, he was engaged on structural work for the Aberdeen passenger station. From 1922-36, Mr. Williamson was Chief Engineer to Sir Alexander Gibb & Partners. A member of the Institution of Civil Engineers. Mr. Williamson read a number of papers before the institution and elsewhere, and he was also the author of a number of technical books.





*Mr. W. H. W. Maass*

Appointed Advisory Engineer, London,  
South African Railways



*Mr. H. W. Gillis*

Freight Traffic Manager, Montreal,  
Canadian Pacific Railway, 1948-53



*Mr. Harry Arkle*

Appointed Freight Traffic Manager, Montreal,  
Canadian Pacific Railway

Mr. W. H. W. Maass, M.I.Loco.E., M.I.Mech.E., Personnel Engineer, Mechanical Engineering Department, South African Railways, who, as recorded in our August 14 issue, has recently been appointed Advisory Engineer, London, joined the service of the South African Railways as an Apprentice Fitter in the Mechanical Department, Pretoria, on January 1, 1924. Five years later he became Improver at the same depot and on September 1, 1929, he was appointed Pupil Engineer at Pretoria, from where he transferred to Johannesburg on February 21, 1931. Soon afterwards he left for London, where he completed his pupilage and also served as a Draughtsman for a year. On being promoted Assistant Mechanical Engineer, Salt River, Mr. Maass returned to the Union at the end of 1935, and, after holding that position for two years, again transferred to London—this time as Assistant to the Advisory Engineer

of the South African Railways. After spending nine years in Britain, he took up the position of Mechanical Engineer, East London, until promotion to Advisory Engineer, London, on December 1, 1948, took him to the United Kingdom once more. In September, 1951, he returned to the Union to become Mechanical Engineer, Pretoria, for four months before being promoted Personnel Engineer in the office of the Chief Mechanical Engineer.

Mr. H. W. Gillis, Freight Traffic Manager (Rates and Division), Montreal, Canadian Pacific Railway, who, as recorded in last week's issue, has retired, has completed 35 years' service. In his capacity as Freight Traffic Manager he had system-wide jurisdiction in Canada and the United States for the setting of rates for all traffic, including the divisions of revenue necessary on long hauls

shared with other carriers. Previous to receiving this appointment in February, 1948, Mr. Gillis had been for 17 years Assistant Freight Traffic Manager, Western Lines, at Winnipeg, having gone there after four years in a similar post at Montreal. Prior to his move to Winnipeg he had seen service, entirely in Montreal, in all branches of freight traffic, including foreign freight (steamships). Mr. Gillis was born in Richmond, Que., on December 7, 1889, and was educated there. He is a member of the Winnipeg and Vancouver Boards of Trade.

Mr. Harry Arkle, Freight Traffic Manager, Winnipeg, who, as recorded in last week's issue, has been appointed Freight Traffic Manager (Rates and Divisions), Montreal, was General Freight Agent at Winnipeg for two years before becoming Freight Traffic Manager there. He has



*Mr. W. M. Jamieson*

Appointed Assistant Freight Manager,  
Winnipeg, Canadian Pacific Railway



*Mr. W. F. Gill*

Appointed Personnel Manager,  
New Zealand Government Railways



*Mr. I. S. Johnston*

Appointed Comptroller of Stores,  
New Zealand Government Railways

been responsible for the company's freight organisation in the Prairie and Pacific regions. Mr. Arkle has spent his entire career in Winnipeg, starting as a clerk in 1912 and working as Division Freight Agent from 1943 until his appointment as General Freight Agent in 1946. Born at Gateshead-on-Tyne, England, April 7, 1893, he served overseas in the 1914-18 war with the 29th Battalion.

Mr. W. M. Jamieson, Assistant to General Freight Agent, Toronto, Canadian Pacific Railway, who, as recorded in last week's issue, has been appointed Freight Traffic Manager, Winnipeg, has been with the company for 41 years at Toronto, Montreal, and Winnipeg. He first went to Western Canada in 1909 as General Freight Agent and, in 1951, he became Assistant Freight Traffic Manager. He is a former Chief of Tariff & Division Bureaux at Montreal, and in Toronto was Assistant to the General Freight Agent. Mr. Jamieson is a four-year veteran of the 1914-18 war.

Mr. W. F. Gill, Field Officer, General Manager's Staff Division, New Zealand Government Railways, who, as recorded in last week's issue, has been appointed Personnel Manager, began his railway career in 1916 as a cadet at Shannon, in the Manawatu district. After thirty years of experience at city and country stations, and in district traffic offices, he was promoted to be Field Officer in the General Manager's Staff Division, a position he held until his appointment as Personnel Manager. For 22 years Mr. Gill was Branch Secretary of the New Zealand Railway Officers' Institute, and for 20 years was an executive councillor. He has served on the Government Railways Appeal Board, first as staff member, and later as the Department's representative. Mr. Gill has also filled the position of assessor on the Government Railways Industrial Tribunal.

Mr. I. S. Johnston, Stores Inspector, New Zealand Government Railways, who, as recorded in last week's issue, has been appointed Comptroller of Stores, joined the railways in 1918 as a cadet at the North Otago station of Hampden. He entered the Department's Stores Branch during the following year, and by 1939 had become Senior Clerk in the Stores Shipper's office at Wellington. Ten years later he was promoted to Senior Clerk in the Comptroller of Stores' office, and in 1951 was appointed Stores Inspector.

Mr. F. G. Hawke, Purchasing Agent in London for the Canadian Pacific Railway, retires on August 31 after more than 45 years service. He will be succeeded by Mr. G. Groome, Assistant Purchasing Agent, in the company's Liverpool office.

Mr. W. E. Newton, formerly Commercial Assistant to Dock Superintendent, Fish Docks, Grimsby, who retired on superannuation from the service of the Railway Executive on March 3, 1951, was ordained into the Ministry of the Church of England at Worcester Cathedral in June last following a period of training at Queen's Theological College, Birmingham, and the Worcester Cathedral Senior Ordinands Training Course. He has now taken up an appointment as Assistant Curate, Redditch Parish Church, Worcestershire. Mr. Newton began his railway career in 1904 and, after gaining District and Head Office experience, saw service in the 1914-18 war with the Royal Engineers (Transportation Unit). On resuming duty he filled a number of positions, being made Chief

District Goods Clerk, Grimsby Docks, in November 1939. Some 3½ years later he became associated with the work of the Grimsby Fish Docks with the title of Commercial Assistant to the Fish Dock Superintendent, which post he occupied until his retirement.

Mr. R. L. Bingham, Assistant to the Stores Superintendent, Western Region, British Railways, retired on August 1 after 48 years' service.

Mr. A. I. Macmillan, District Engineer, Crewe, British Railways, London Midland Region, has been appointed Assistant (Works Maintenance), Civil Engineer's office, Euston.

Mr. L. G. Morris, Motive Power Superintendent, Colwick, Eastern Region, British Railways, has been appointed District Motive Power Superintendent, Neath, Western Region.

Mr. G. C. Parslew, District Motive Power Superintendent, Kentish Town, London Midland Region, British Railways, has been appointed District Motive Power Superintendent, Cambridge, Eastern Region, British Railways.

A luncheon was given on September 3 to Mr. Alfred William Arthurton, Secretary, British Railways Press Bureau, 1922-34, in honour of his 80th birthday. An Ode, especially composed for the occasion by Mr. C. T. Cuss, was read at the luncheon, which took place at Reading.

Mr. Earl Fisher has been appointed System Superintendent of Mechanical Maintenance, Road Transport Department, Canadian National Railways.

Mr. A. E. Beauchamp has resigned his directorship of Broom & Wade Limited.

The following changes in plant management staff have been announced by The American Locomotive Company:—

Mr. J. J. Smith, Manager, Locomotive Division Plant, American Locomotive Company, appointed Manager of Plant Facilities.

Mr. W. H. Allison, General Superintendent of the Locomotive Division Plant, was appointed Manager.

Mr. W. L. Larson, Manager of the Ordnance Division Plant, was named General Plant Manager of the Dunkirk and Beaumont, Tex., plants.

Mr. R. A. Controy, Ordnance Division Production Manager succeeds Mr. Larson as Manager of the Ordnance Division Plant.

Mr. E. N. Cooley, Assistant to the President, on temporary assignment at Dunkirk, has been named Administrative Assistant to the President with headquarters at Schenectady.

Other changes announced in the manufacturing operation are as follows:—

Mr. W. H. Clark, General Purchasing Agent for the company, was appointed Consultant on all matters relating to procurement activities. Mr. E. J. Van Valkenburg, Director of Procurement for the Ordnance Division, was appointed Director of Procurement for the company. Mr. J. T. Lewis, Manager of Quality Control for the company, was named Consultant on all matters relating to quality control activities. Mr. E. N. Boswell, Chief Inspector of the Locomotive Division, was appointed Director of Quality Control for the company.

In addition Mr. G. C. Paddock was named Purchasing Agent for the Loco-

motive Division Plant and Mr. T. S. Devoy was appointed Purchasing Agent for the Ordnance Division Plant.

Mr. P. H. Nye, Manager of the Business Development Department of the General Electric Co. Ltd., is retiring at the end of this month after completing 54 years' service with the company.

Mr. J. Savage, B.Sc., F.Inst.P., has been appointed head of the Physics Department of the British Iron and Steel Research Association.

Mr. Mervyn W. Shorter, Director & General Sales Manager, Westinghouse Brake & Signal Co. Ltd., has been elected Chairman of the boards of the Railway Signal Co. Ltd. and W. R. Sykes Interlocking Signal Co. Ltd., in succession to Mr. Donald F. Brown, who resigned those offices on July 13. Mr. J. Griffith Hall, Director & Secretary, Westinghouse Brake & Signal Co. Ltd. has been elected to the board of W. R. Sykes Interlocking Signal Co. Ltd.

## Western Region Local Train Service

British Railways, Western Region, announce that with the introduction of the winter timetable on September 21, the passenger train services on the Valley Lines radiating from Cardiff will be completely revised. The new services will operate on the Treherbert, Merthyr, Pontypridd, Cardiff, Barry and Penarth lines; the Aberdare/Abercynon Line; the Porth/Maerdy branch and the Rhymney to Caerphilly and Cardiff line.

Giving details of the improved services recently, Mr. H. H. Swift, South Wales Area Officer, explained that the timetable revision had entailed many months of planning and the new service is based on the principle of regular interval departures from the majority of the stations.

### Hourly Interval Services

An hourly interval service will be provided between Treherbert and Pontypridd, and Merthyr and Pontypridd, with connecting services between Maerdy and Porth, and Aberdare and Abercynon. From Pontypridd in the direction of Cardiff, trains will run at half-hourly intervals, at five and 35 minutes past the hour, from early morning until late evening and, in general, these trains will run through to Barry or Penarth. On the Rhymney-Caerphilly-Cardiff line, services will be at approximately hourly intervals.

Up to 9.0 a.m., and between 4.0 p.m. and 6.0 p.m., the revised interval train service will be augmented by additional trains to cater for business travel. The interval services will apply in both directions on the same frequency and trains will leave Barry Island on the hour and half-hour for Cardiff and Pontypridd. Generally, the trains will run alternately through to Treherbert and Merthyr.

An innovation is the provision of certain through services between the Rhymney line and Barry and Penarth. The running of most of the trains from the Valleys through to Barry or Penarth will provide a much improved service.

A poster setting out in diagrammatic form details of the time interval services applicable to the various lines has been designed specially and is now exhibited in the area.

## Ministry of Transport Accident Report

Wheatshaf Junction, December 22, 1952: British Railways, Western Region

Mr. J. L. M. Moore, Chief Railway Employment Inspector, Ministry of Transport, inquired into the accident which occurred at 10.24 p.m. on December 22, 1952, when the 8.20 p.m. vacuum-fitted freight train, Birkenhead to London, was travelling slowly up the Gresford bank of nearly 4 miles at 1 in 80 and approaching Wrexham under clear signals. The firebox of the "Grange" class 4-6-0 type engine No. 6859 collapsed from shortage of water, the result of a false gauge reading. The fireman sustained severe burns and shock. The driver escaped injury, but was severely shaken, and the guard received bruises owing to the sudden stoppage.

The engine stopped 120 yd. short of Wheatshaf Junction box, about 1½ miles from Wrexham Station. The signalman,

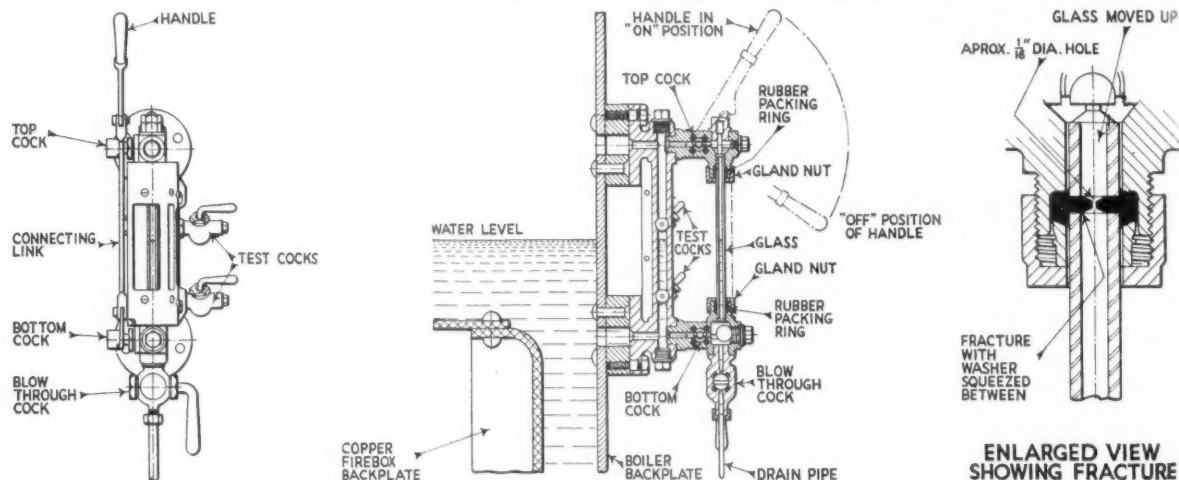
the damage was the result of the shortage of water."

The explanation of that was to be found in the gauge. There was only one, in accordance with former G.W.R. practice. There was a clean break across the glass tube about 1 in. from the top (see drawing). This had occurred inside the rubber washer, with the result that there was no leak or external evidence of fracture. The top portion had moved up slightly, allowing the washer to squeeze into the fracture and spread itself across the bore of the tube until barely a  $\frac{1}{16}$ -in. aperture remained.

This would have the effect of reducing steam pressure on the top of the water, allowing it to rise above the level in the boiler and give a false reading. This

possible, and both men and another fitter, whose duty it was to examine the engine in steam after the "X" examination, found the gauge working satisfactorily, with no sign of leak from either gland. The engine worked to Oxley that day and returned on the next, without comment or complaint. It went out again that next evening and a new set of men took charge at Chester. The fireman immediately noticed the water to be returning sluggishly, after using the gauge drain cock. The driver relieving these men at Oxley Sidings was told of this and reported it at shed.

The fitter there said that the first time he tried the gauge it appeared to be working normally. He admitted that on repeating the test the water appeared to rise



Drawing of water gauge and fittings involved in collapse of firebox near Wheatshaf Junction, Western Region, December 22, 1952

having heard a loud report, protected the train in both directions until he received assurance that the down line was unaffected. Nearby residents heard it and were the first to find the injured fireman, jumped or fallen from the footplate. They took him and the guard to a house and attended to them until an ambulance arrived.

### The Engine

The engine had a Swindon standard class "1" boiler for 225 lb. pressure, and had run 19,500 miles since the last heavy intermediate repair there in June, 1952, when the boiler was changed. This was examined on December 18, when the firebox and fusible plugs were in good order.

Damage was found restricted to the front of the crown. Lead had melted in the front fusible plug, which is 12 in. from the tube plate, but the back one was intact. This is explained by the slope of the crown. When the engine is level the front is an inch higher than the back, and the difference in height was possibly doubled on this occasion by the rising gradient. There may have been as much as 2 in. of water covering the back part of the crown when the front became uncovered.

The report details the condition in which the firebox was found, and observes that "all material evidence made it clear that

difference could not be determined with certainty. It depended on the extent of the restriction under pressure. It must have been considerable, however, as when the enginemmen heard the first sounds of escaping steam, due to the plug fusing, they noticed the water to be almost at the top of the gauge glass. This was immediately confined by using the drain cock. Consequently they did not suspect or look at the plugs. They concluded a tube had failed, and called to the signalman at United Colliery box, ½ mile from Wheatshaf Junction, that another engine would be required at Wrexham.

### The Gauge

The glass tube which failed had been fitted at Birkenhead on the morning of December 18, four days before, by an apprentice fitter working with a fitter carrying out an "X" examination. This apprentice, who had almost completed 5 years, had changed many such tubes and noticed nothing unusual with this one. The old one came out in one piece and the new one was inserted without difficulty. He tightened the gland nuts by hand and gave some slight additional pressure by spanner, as usual. He neither saw nor heard anything to suggest the glass had broken.

The fitter checked the work as far as

a little more sluggishly than it should have done. He did not uncouple the link connecting the top and bottom cocks to locate the trouble, but opened the test cocks and found steam and water coming from both. As the position of the top one is equivalent to a point rather more than half way up the glass, and the water showing there was slightly above that, he was satisfied that the gauge was registering correctly. He concluded that "the defect was so slight that it would not affect the safe working of the gauge." He allowed the engine to take up the return working on December 21 and instructed the driver to have the gauge examined at home station.

The three sets of men who worked the engine back to Birkenhead confirmed the consistent slow return of water, and a repair card was put in stating "water gauge frame wants changing." The engine was out of steam when the fitter reached it, but he made the usual tests. Waterways were found to be clear and the water seemed to rise at the normal rate after using the drain cock. He concluded that the gauge was working correctly and the wording on the card to be due to a stop cock blowing through. This makes renewal of the tube difficult when the engine is in steam, but does not affect the efficiency of the gauge. He had no opportunity of confirming this,



but did not feel called on to stop the engine; its fire had just been lighted.

He did not check boiler water level with the test cocks, but had he known that drivers had found the water to be returning sluggishly after draining he would have acted differently, as that could lead to a false reading. By an oversight he omitted to hand in the repair card before going off duty and thus nobody knew of the report against the gauge.

The engine was then released with the gauge still in the same condition, but the Birkenhead fire raiser noticed nothing unusual, testing soon after pressure began to rise.

The driver who left at 8.30 p.m. on the day of the accident tried the gauge when preparing the engine and noticed nothing unusual on the run to Chester. His fireman tested just before leaving the shed with the same result. Operating the test cocks he found water coming from both, but had by then "filled the boiler solid." He did not again see the top of the water in the glass before they handed over at Chester without comment to the driver concerned in the mishap. This latter man said he paid special attention to testing by the fireman—not his regular one—to be sure the glass was full. The top of the water was out of sight.

The fireman opened the drain cock three or four times, mainly to see if the boiler would take any more water. Both were so satisfied it was full that when they heard the steam in the firebox they felt quite able to reach Wrexham and had only one injector in operation.

#### Chief Inspector's Conclusions

The breaking of the gauge glass probably occurred while it was being fitted by the apprentice, or shortly after, but some little time appears to have elapsed before the rubber packing obstructed the waterway to any extent. Such a fracture is most unusual and experiments were made with the gauge frame from engine No. 6859 and a similar one. With both it was found possible, by excessive tightening of the top gland nut, to produce a clean break about an inch from the top of the glass, without sound or external evidence of it. Suspicion fell on the alignment of the frames and experiments proved almost conclusively that the fracture which caused the accident was the combined result of the frame being slightly out of alignment and some over-tightening.

With this type of gauge the top and bottom cocks are screwed into the main casting fixed to the boiler backplate by flanged joints. The gauge from engine No. 6859 was considered to need the bottom cock casting turning 1/180th of a turn to bring it into correct alignment. As the frames are assembled in the parent works and issued as complete units there should be no occasion for the original alignment to be altered. This frame was completely overhauled at Swindon in May, 1952; there was no sign of any subsequent movement of the bottom cock. So far as is known it had given no previous trouble and therefore the alignment fault was not itself sufficient to break the glass.

It is reasonable to conclude, therefore, says Mr. Moore, that the apprentice was "over anxious to make sure there would be no leakage from the glands when the engine was steamed and put more strain on the top nut than was usual or necessary." He hesitates, however, to blame him or the supervising fitter on that account.

The fitter at Oxley, on the other hand, was seriously at fault, Mr. Moore considers, in sending the engine out, knowing its one gauge to have a defect he could not locate. He had been informed of the symptoms noticed by drivers and experienced them. He knew that slowly returning water meant liability of a false reading, the extent of which was not necessarily revealed by using the test cocks. It was his duty to have withdrawn the engine.

The Birkenhead fitter also was at fault, to a lesser extent. He was not informed of the exact nature of the complaint and had no opportunity of making a steam test, but he could and should have examined more thoroughly the frame before deciding there was no need to change it as asked.

Although the initial cause of the trouble was the mis-alignment of the frame, no ill-effects would have resulted had either of these fitters carried out his duty properly; nevertheless, some responsibility must rest, Mr. Moore thinks, on the footplate staff. A booklet entitled "Fuel Efficiency on the Footplate," supplied in the Western Region, lays down six operations for testing water gauge frames; the last is "operate both test cocks to ensure they are in working order." Only one of the men to whom Mr. Moore spoke appeared to have carried that out. Although not an infallible means of discovering a false reading or determining its precise extent, had that been done the false level in the glass would almost certainly have been discovered. The omission is the more surprising and serious in the

case of the men who handled the engine after the slow water return first was noticed, as many knew the gauge to be under suspicion.

#### Remarks

This failure to operate test cocks calls for immediate attention by the authorities in all Regions where there are locomotives that may have only one water gauge. Despite assurances to the contrary, it is also clear that footplate staff, and possibly some fitters, do not appreciate the dangerous significance of slow water return after draining, fortunately comparatively rare; nevertheless it is important to make all aware of the possible consequences.

Drivers should be reminded of their responsibilities when compiling repair cards. It is imperative that they give as much information as possible regarding defects, but they should leave it to the repair staff to decide their remedy. In this case a fitter allowed himself to be misled by the driver's report. Had he been informed of the symptoms observed on the engine in steam he would have been better placed to decide what was necessary and the accident might have been avoided.

The fitting staff's attention should be drawn to the possibility of the gauge glass snapping inside the rubber packing without sound or subsequent leakage. Mr. Moore concludes by observing that the circumstances in the case were "so unusual and contain such useful lessons" that he feels his report "should be given widespread publicity for the guidance of others."

## Public Day at Longmoor Transportation Centre, R.E.

*Jubilee celebrations: technical training activities, railway plant, and premises on view*

Public Day at the Transportation Centre, Royal Engineers, Longmoor, Hants., of which Brigadier C. H. Barnett, M.Inst.T., is Commandant, was held on September 5. In abeyance since 1950 because of training requirements, Public Day was revived this year to celebrate the jubilee of railway work at Longmoor; this began soon after the arrival from South Africa in May, 1903, of the 53rd Railway Company, R.E. Some 6,500 persons visited Longmoor last Saturday, and the proceeds from the sale of souvenir programmes and of tickets for train rides, and so on, have been paid to the Royal Engineers' Benevolent Fund. The personnel taking part in demonstrations and so on were provided by the permanent staff and trainees of the Centre, 16 Railway Training Regiment and by 18 Railway Group, R.E. (A.E.R.), then in camp.

The Transportation Centre consists of: Headquarters, Transportation Centre; Headquarters, Army Emergency Reserve (Transportation and Movement Control); the Army Movement Control School; and the Railway Wing, Transportation Centre; all these are at Longmoor. At Marchwood, on Southampton Water, is the Port Wing, Transportation Centre. The Centre undertakes the training of all Regular, National Service, and Army Emergency Reserve officers and men in the operation and maintenance of railways, ports and inland waterways, and movement control. At Longmoor there are 18 steam and six diesel locomotives, a breakdown crane, and a railway mobile workshop, besides the main workshops, running sheds, drawing office, stores, and so on. Corresponding

equipment for port and inland waterway training is provided at Marchwood.

#### Railway Operating and Signalling

Visitors on September 5 were shown a number of operating activities and plant. Besides train and locomotive rides, demonstrations were given of erection of a ramp wagon for loading, and of a 45-ton Ransome & Rapier breakdown crane. British and American main-line and shunting locomotives were on view, also the steam and diesel locomotive sheds. Demonstrations also were given at the Signal School, equipped with an electrically controlled and operated O-gauge railway and with full-size signalbox instruments for training "blockmen"; teleprinter demonstrations were given by the Railway Telegraph Squadron, Royal Corps of Signals (A.E.R.), a unit of 18 Railway Group.

#### Construction and Maintenance

Platelaying demonstrations were given with prefabricated track, and displays of launching a bridge and piledriving. Also on view were a rail wrecker used by the German forces for destroying track in Italy during the last war; specimen lengths of track; Bridge No. 6 over Longmoor Yard, reconstructed last year by A.E.R. and T.A. units; various types of mechanical plant for railway construction work; and survey instruments and examples of work by military railway draughtsmen.

#### Railway Workshops

The public were shown a railway mobile workshop, of six vehicles, and equipped

with power plant for working machine tools. The train forms part of a Locomotive Running Squadron, R.E. The Longmoor workshops were on view, containing machine shops, foundry, smithy, carpenters' shop, lifting shed, and so on.

Other features of Public Day were an exhibit and display by the Port Wing; the Movement Control School model room with models depicting lines of communication and loading of railway vehicles; the Transportation Museum; model OO-gauge railway built by officers and men in their spare time; barrack room accommodation, cookhouse, and so on, on view to the public; and drill displays by 16 Railway Training Regiment.

Public Day closed with the beating of Retreat from 6.30-7 p.m. by the Staff Band of the Corps of Royal Electrical & Mechanical Engineers.

## Retirement of Mr. R. A. Riddles

The Minister of Transport, Mr. Alan Lennox-Boyd, has written as follows to Mr. R. A. Riddles, whose retirement on September 30 as Member, Railway Executive (Mechanical & Electrical Engineering), is announced on page 299:—

"Thank you for your letter of September 4, telling me you have decided to retire when your present appointment as a Member of the Railway Executive expires at the end of this month. I, of course, understand your wish to do so after so many years of service to the railways, and I will make arrangements accordingly.

"I take this opportunity to thank you, personally and on behalf of the Government, for the distinguished and very valuable service you have given to the Railway Executive and send you my best wishes for the future.

"I am very sorry at your retirement and you will be greatly missed."

## Staff & Labour Matters

### Saturday Afternoon Duty

When the Railway Staff National Tribunal published its findings in October last on the union's claim for payment at time-and-a-half for work performed on Saturday afternoons, it suggested discussions between representatives of the unions and the Railway Staff Conference to consider alleged anomalies which the Unions claimed had arisen out of the previous decision (No. 13) of the Tribunal relating to Saturday working.

Discussions have since been proceeding between the unions and the railway management and the following arrangements have now been agreed:—

Besides staff booking on duty between 2 p.m. and 8 p.m. on Saturdays, staff who book on duty before 2 p.m. for either of the causes set out below shall be entitled to the special payment provided by R.S.N.T. Decision No. 13 as if they had booked on at 2 p.m. or after:

(a) Staff required to walk or travel from the point at which they book on duty to the point at which they are required to work and who are rostered for and actually work a full turn of duty commencing at 2 p.m. or after.

(b) Staff required to perform additional duty prior to their normal duty and who are rostered for and actually work a full turn of duty commencing at 2 p.m. or after.

Note. The term "full turn of duty" referred to in (a) and (b) above means:

Eight hours in the case of staff rostered on the basis of eleven eight-hour turns per fortnight; seven hours twenty minutes in the case of staff rostered on the basis of six turns of equal length per week. The appropriate number of hours constitutes a full turn for clerical staff.

In applying these arrangements the following points are to be observed:

(1) In the case of trainmen payment under clause (a) of the arrangements is to be made to men who are involved in walking or travelling to the point at which they take over duty on an engine (or train in the case of guards) provided they work a full rostered turn of duty commencing at 2 p.m. or later.

(2) Payment under clause (b) of the arrangements is to be made in any case where there is a variation of the weekly roster to provide for additional work being performed (prior to 2 p.m.) before the commencement of a turn and a full turn of duty as defined in the note above is rostered and worked from 2 p.m. or later.

(3) Staff who, by mutual agreement, change over on Saturdays at an earlier hour than that rostered of 2 p.m. and subsequently complete a full rostered duty from 2 p.m. to 10 p.m. are to be dealt with domestically by the region concerned in the light of the circumstances of the individual cases on the understanding that any such mutual arrangement is to be authorised by the appropriate officer in the department concerned.

**NEW AGENCIES FOR SELSON MACHINE TOOL CO. LTD.**—Five Continental manufacturers of machine tools have recently appointed the Selson Machine Tool Co. Ltd., North Acton, London, their sole agents in the United Kingdom. Three German and two French are among the Continental firms: Richard Stuhlmann & Company (keyseating machines); Alfred Gauthier G.m.b.H. (gear hobbing machines and precision automatics); Prahoma-Werk Kehren & Company (makers of a complete range of surface grinding machines); Etablissements M. de Valliere (centre lathes and fine boring machines); and the Belgian Ateliers Peeters with their "Hobmatic" gear hobbing machines. Early delivery can be offered on all types.

**CRANE MOBILE TIPPLER.**—A crane mobile tippler has been devised to speed dirt disposal at Comrie Colliery, Fife. It is based on conventional tippler design, but can be moved to various places on the colliery tip along the locomotive road used for carrying mine cars. Both 2-ton and 3½-ton mine cars are used. When tipping is in progress, the mine cars run up long shallow ramps on each rail to the tipping stage. Ropes connected to two corners of the stage lead up over pulleys in the top of the frame and down to the driving shaft. Power for the shaft is produced by a 25-h.p. electric motor. An electrical cut-out switch on one of the catch hooks at the top of the frame stops the motor and applies the brake when the leading edge of the stage reaches the tipping angle, 45 deg. past vertical. When the tippler is moved to a new site on the tip it is drawn by a diesel locomotive which hauls the cars. The installation of the machine has enabled the number of men on disposal work to be reduced; 18 manshifts used to be needed to empty 92 mine cars in 24 hours, now seven manshifts do the same work. The tippler was designed and developed by the Chief Engineer of Comrie Colliery.

## Contracts & Tenders

Robert Hyde & Son Ltd. has received an order from the Birmingham Railway Carriage & Wagon Co. Ltd for 368 Isothermos axleboxes to be fitted to coaches which the latter is building for the Nigerian Railway.

British Railways, North Eastern Region, have placed a contract with A. Robinson (Contractors) Limited, Middlesbrough, for the construction of main line embankment and filling drainage channels with slag at Thornaby.

British Railways, Eastern Region, have placed contracts with Tersons Limited, London, N.3, for the renewal of permanent way in the Peterborough District, and permanent way alterations, etc., in connection with station reconstruction and widening scheme at Potters Bar Station.

British Railways, London Midland Region, have placed the following contracts:

Weston & Co. (Manchester) Ltd., Manchester 3: renewal of engine and shed roof with asbestos cement coverings, and repairs to pits and pavings at Lostock Hall Motive Power Depot

Leonard Fairclough Limited, London, S.W.1: drainage works between 54 miles and 54½ miles at Castlethorpe

Leonard Fairclough Limited, Adlington, Lancs.: earthworks in the locomotive examination and repair shop at Crewe North Motive Power Depot

Mr. J. E. B. Wheatley, East Kirkby, Notts.: repairs and repointing of brickwork of Asworth-Giltbrook viaduct

British Railways, Western Region, have placed the following contracts:—

Craven Bros. (Manchester) Limited, Stockport: supply of one locomotive axle journal returning lathe for "AW" Shop, Locomotive Works, Swindon

Fields Limited, Reading: painting goods offices, goods shed and other buildings at Reading

M. A. K. Fraser & Company, Cardiff: painting elliptical tubes and portals of the Royal Albert Bridge, Saltash

W. H. Streeter Limited, Hampton, Middlesex: painting wagon repair workshops and locomotive depot at Bromsgrove

Shirley Painting & Decorating Service, London, N.4: painting carriage sheds and offices at Old Oak Common

Fairfield Shipbuilding & Engineering Co. Ltd., Chepstow: dismantling existing, and erecting new superstructure, for Pontsarn Bridge near Peterston Station

H. J. Spackman & Sons Limited, Swindon: carrying out alterations to the platforms, etc., for the mechanisation of the goods shed at Swindon

Rownsdon, Drew & Clydesdale Limited, London, E.C.4: supply, delivery and erection of one electrically-driven slat conveyor at Cheltenham Goods Shed

George Simpson (London) Limited, London, S.W.1: repairing roofs and providing new smoke shutters at the Motive Power Depot, Aberdare

A. T. Chown & Co. Ltd., London, W.2: conversion of stables at Slough into offices

Uni-Secc Limited, London, W.1: provision of improved customs accommodation at Fishguard Harbour Station

Ericsson Telephones Limited, London, W.C.2: provision and installation of a two-position telephone exchange at Port Talbot Station

Willoughby (Plymouth) Limited, Plymouth: work to be performed in connection with the

overhaul and survey of ss. *Sir John Hawkins*, and the supply of equipment

The Special Register Information Service, Exports Services Branch, Board of Trade, reports that the United Kingdom Trade Commissioner at Delhi has notified a call for tenders issued by the Government of India, the Director General of Supplies & Disposals, Shahjahan Road, New Delhi, for:—

180 clips extension R.H. for tongue rail (points)

120 anchor rod to detector shoe

24 lock hand release bolt with can slide and stretcher bars

27 mechanism switches and lock without plunger or lock cap.

The closing date for the receipt of tenders is 10 a.m. on September 14. United Kingdom firms not already on the approved list of the Director General of Supplies & Disposals, must give their banker's reference on application for tender forms.

The Director General of Supplies & Disposals, Railway Stores Directorate, New Delhi, is inviting tenders for:—

#### Class EB.1

(a) 45,000 plates dividing (steel class II galvanised) for use wit. I.R. buffer recoil springs

(b) 646 locks door with handles complete l.h. cast iron and steel class II for inside and outside opening door b.g. and m.g.

(c) 540 rings copper seamless metal joint to B.N.R. C.M.E.'s standard

Tenders are to be submitted to the Director General of Supplies & Disposals, Shahjahan Road (Section SRI), New Delhi, quoting references (a) SRI/16665-D/III; (b) SRI/16606-D/I; (c) SRI/16622-D/II; and will be received up to 10 a.m. on (a) September 17, (b) September 18, (c) September 22. Forms of tender are only available for purchase in India from the Deputy Director General (Supplies), Directorate General of Supplies & Disposals, New Delhi; Director of Supplies & Disposals, Bombay or Calcutta; or Deputy Director of Supplies & Disposals, Madras.

The Special Register Information Service, Export Services Branch, Board of Trade, reports that the United Kingdom Trade Commissioner at Johannesburg has notified a call for tender issued by the South African Railways, for 57 facing point machines to S.A.R. Specifications Nos. 17/2 and 17A/1.

The closing date for the receipt of tenders is October 1 at 9 a.m. Tenders must be enclosed in a sealed envelope and have inscribed on the outside "Tender No. C. 6700, Electrical Signalling Material: Point Machines," and should be addressed to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg.

Attention is drawn to a leaflet issued by the South African Railways headed "Instructions for Guidance of Overseas Tenders and their South African Representatives or Agents," a copy of which is kept for reference in the Export Services Branch.

A copy of the tender documents, including the specifications quoted, may be inspected in Room 801 at Lacon House, Theobald's Road, W.C.1, until September 12, after which date it will be available for loan to United Kingdom firms in order of application.

The Special Register Information Service, Export Services Branch, Board of Trade, reports that the United Kingdom Trade Commissioner at Johannesburg has notified

a call for tender, No. B.6589, issued by the South African Railways for:—

Eight six-wheel bogies of cast steel construction, complete in all respects except for wheels and axles, for type U-15 well wagons (gauge 3 ft. 6 in.)

One set as-made drawings, hand-drawn on tracing cloth must be supplied by the contractor. The set of drawings is to be covered by a complete index of all parts required

One set erection prints

The closing date for receipt of tenders is 9 a.m. on October 22. Tenders must be enclosed in a sealed envelope inscribed on the outside "Tender No. B.6589: For Six-Wheel Bogies," and addressed to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg.

A copy of the tender documents, including specification, may be inspected in Room 801 at Lacon House, Theobald's Road, London, W.C.1, until September 19. After then it may be borrowed by United Kingdom firms in order of application.

## Notes and News

**Senior Draughtsman Required.**—Applications are invited for the post of senior draughtsman required by an East Midland firm. See Official Notices on page 307.

**Senior Assistant Traffic Superintendent Required.**—Applications are invited for the post of senior assistant traffic superintendent required by the Malayan Government Railway for a tour of three years with prospect of pensionable employment. See Official Notices on page 307.

**More Passengers on Irish Mail Route.**—During July and August, British Railways, London Midland Region, carried 3,000 more passengers than last year to Ireland via Holyhead and Dun Laoghaire. Some 152,000 travelled by this route during the period.

**London Midland Region Pictorial Posters.**—The accompanying illustration shows a new poster of St. Albans Abbey, by Claude

Buckle. It was produced by the Public Relations & Publicity Department of the London Midland Region and is being displayed on all Regions of British Railways.

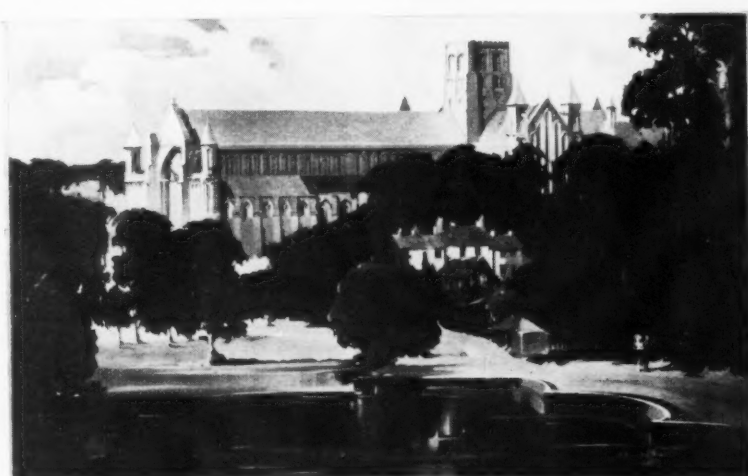
**Heavy Weekend Passenger Traffic on British Railways.**—Last Saturday British Railways carried 160,346 passengers from the principal London termini in 544 long-distance trains, and on Saturday and Sunday ran 45 special trains to Morecambe and Southend with 18,052 passengers travelling to see the illuminations.

**Accident at Bethnal Green, Eastern Region.** On September 4th the 2.21 p.m. train from Liverpool Street to Ipswich broke in two while passing through Bethnal Green Station. Four passengers were injured in the first coach which was derailed and badly damaged after striking an overhead line standard. The second and third coaches were derailed but remained upright.

**Railway Telegraph Squadrons.**—Reference was made in our issue of September 4, page 277, to 2 Railway Telegraph Squadron as a unit of the Royal Engineers. This and other Railway Telegraph Squadrons are units of the Royal Corps of Signals, though one such unit is an integral part of a Railway Group, R.E.

**University of Birmingham; Department of Extra-Mural Studies: Series of Meetings on Railway History.**—On Thursday, October 8, at 6 p.m. Mr. C. R. Clinker will commence a series of twenty meetings on Railway History. These meetings will be held at the University, Edmund Street, Birmingham, and the fee for the course is 12s. 6d.

**Wade Superchargers and Allied Products.**—The exhibits displayed at the current Engineering & Marine Exhibition at Olympia, London, include a range of Roots-type superchargers manufactured by Wade Engineering Limited, a novel feature of which is the provision of an air-gap seal which, it is stated, precludes leakage of oil into the case. The range



Over 1000  
years old

ST. ALBANS ABBEY

20 miles  
from London

OVERLOOKING THE SITE OF THE  
ROMAN CITY OF VERULAMIUM

ON THE WATERWAYS

BOOK TO ST ALBANS CITY  
OR ST ALBANS ABBEY

A new London Midland Region poster featuring St. Albans Abbey



includes small units for liquid-fuel starters for aircraft, to superchargers for oil engines of 200 h.p. and upwards. Other products of the company in the field of applied thermo-dynamics include variable compressors, turbo-extractors, air motors, and air-cycle temperature control units.

**Husband Left on Platform with Tickets: "An Emergency".**—The Clerkenwell magistrate, Mr. Frank Powell, has dismissed a summons against a woman passenger alleged to have stopped the closing of an automatic door of an Underground train "not in a case of emergency." The passenger said that she entered the train as the doors were closing, whilst her husband, who held the tickets, was left on the platform.

**Leamside Station to Close.**—Because the services provided at Leamside Station are being maintained at a considerable financial loss, British Railways, North Eastern Region, announce that this station will be closed to all traffic on and from October 5. The bus services available locally provide an adequate alternative for passengers. Alternative facilities for parcels traffic are available at Fencehouses and Durham Stations, and the present collection and delivery services will be continued. Smalls traffic will continue to be dealt with at Fencehouses, and full road traffic will be handled at Fencehouses and Durham.

**Annual Report of Ruston & Hornsby Limited.**—Present day marketing conditions was the theme of the statement made at the 64th annual meeting of Ruston & Hornsby Limited on September 2, by their Chairman, Mr. W. J. Ruston. Although the company's order book was at about the same level as last year, he said, they had had to reduce production in several directions; completed orders were lying in the

company's packing shops, for which Mr. Ruston blamed either the lack of licences or lack of sterling. Several overseas markets had dwindled, including Brazil, which closed completely in July, Egypt, India, and Pakistan. There had already been some relaxation of import restrictions in Australia, but in no way commensurate with the company's requirements. Other overseas markets were being explored, particularly in Canada. The company was well established in Africa, where prospects were favourable. New designs of engines, diesel locomotives, and other products had been completed, and in some cases were in production.

**Closure of Leeds to Huddersfield Line via Spen Valley.**—British Railways recently inquired into the running of the stopping passenger train service on the Leeds to Huddersfield via the Spen Valley route. These inquiries show that the intermediate stations are being kept open at a considerable loss. It is regretted, therefore, that it will be necessary to close these stations from October 5. The stations to be closed are: Battysford, Northorpe Higher, Heckmondwike (Spen), Liversedge (Spen) and Gomersal. Trains between Leeds and Huddersfield will continue to run by this route and via Morley. The area is well served by bus services, and facilities will continue to be available for parcels and freight traffic.

**Signal Breakdown Caused by Fuse Wire.**—A breakdown in the signalling system which caused the delay of three main-line trains at Shenfield Junction, Eastern Region, was found to be caused by a piece of fuse wire which had been connected from the rail to the signal circuit bonds and covered with ballast. At Brentwood Juvenile Court a 16-year-old school-boy recently was fined £2 with 15s. costs for trespassing on the railway and obstructing locomotives. He said he did

not know that what he did would cause so much trouble and only realised that there was a signal circuit from the rail when his camera tripod caused a spark on connection with the rail and circuit bond.

**British Railways Heavy Weekend Coal Traffic.**—The biggest weekend clearance of deep-mine and opencast coal for four months is recorded by British Railways. In the 48 hrs. ended 6 a.m. on September 7, 367,010 tons were conveyed. The total for the week was 3,210,620 tons, the heaviest since June 22. Both these figures are an advance on the corresponding figures for last year. During the week ended August 29, 212,356 tons of iron and steel from the principal steel works and 348,000 tons of iron ore were conveyed.

**Withdrawal of Passenger Services from Glassaugh.**—British Railways, Scottish Region, announce that from September 21 passenger train services at Glassaugh Station on the Portsoy-Cullen line will be discontinued. Alternative rail facilities for passengers are available at Portsoy, and W. Alexander & Sons Ltd. operate a bus service in the area. Passenger train parcels and freight train traffic in less than wagon loads will be collected and delivered in Glassaugh by Railway Executive road vehicles.

**Over 700 Special Trains for Blackpool and Morecambe Illuminations.**—So great is the attraction of the autumn illuminations at Blackpool and Morecambe this year that British Railways, London Midland Region, are running over 700 special day, half-day, and evening excursion trains to the two resorts. Nearly 500 trains will run to Blackpool between September 11 and October 26, and the 220 trains scheduled for Morecambe will continue until October 19. Blackpool's busiest week-end will be September 26-27, when over 80 specials will arrive; that of Morecambe was September 5-6, with 30 specials. Trains are run from all parts including London, Glasgow, Cardiff, and York.

**Central Wagon (Holding).**—The name of Central Wagon (Holding) has been changed to Mercury Securities Limited. This company has declared an interim dividend of 8s. tax free, out of revenue reserves and a special cash distribution of 3s. 3d. out of capital reserves. At September 30 last the group general reserve was £585,595 and surplus £1,148,369 from wagon fleet compensation. The issued one-class capital is £500,000 in £1 shares. The offer in July by S. G. Warburg and Company for all of Central Wagon (Holding) £1 shares was recently accepted. The terms for each £1 share were: 21s. 3d. cash; one 10s. Central Wagon unit; and letter of allotment for two 10s. shares in Central Wagon.

**Electrode for new Welding Method.**—The Victor mild steel electrode has been introduced by the Quasi-Arc. Co. Ltd., designed for welding fillet and butt joints in the vertical downwards and inclined downwards positions by the touch welding technique produces a weld of mitre section with good penetration into the root; both single run and multi run welds completed with these electrodes providing full-strength joints are easy to use in the vertical downwards and inclined downwards positions with the touch welding technique. The slag in most cases is self-releasing. Victor electrodes can also be used as general purpose mild steel electrodes for welding in all positions. They are manufactured in sizes 12 to 4 swg. and conform to B.S.639:1952. According to B.S.1719

### Best Kept Station on British Railways



Styal Station (Cheshire), London Midland Region, won the special prize for the best kept station on British Railways. All the work was done by the staff of three in their spare time

## OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive, or a woman aged 18-59 inclusive unless he or she, or the employment, is exempted from the provisions of the Notification of Vacancies Order, 1952.

**SENIOR DRAUGHTSMAN** required by old-established East Midland firm. Should be experienced in the design and detailing of Railway Permanent Way. Aged 25 years and upwards. Excellent prospects for an energetic and conscientious man. 5-day week, canteen, superannuation scheme. Please reply stating age, full particulars of experience and salary required. Box No. 255, W.B.G., 39, Cheapside, London, E.C.2.

**DESIGNER AND DRAUGHTSMAN.** Experienced Designer required for medium and high speed C.I. engines and qualified installation Draughtsman for diesel loco. work. Take charge contract and liaison between customer and loco. builder. Good salaries for suitable men with necessary experience. Home Counties, pension scheme, pleasant locality. Details experience, age, salary required to Personnel Manager, Box 946, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

**BOUND VOLUMES.**—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

**SENIOR ASSISTANT TRAFFIC SUPERINTENDENT** required by MALAYAN GOVERNMENT RAILWAY for 3-year tour with prospect of pensionable employment. Salary, etc., equivalent to £1,218 a year rising to £2,100 a year for single men. Additional allowance up to £630 a year for married men according to salary and dependants. Commencing salary according to experience. Free passages. Liberal leave on full salary. Candidates must be A.M.Inst.T. or hold equivalent professional or academic qualifications. They should have served as Special Apprentices with a Railway and had considerable subsequent experience in Traffic Operating and Commercial work, with sound knowledge of modern rating practice. Write to the CROWN AGENTS, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M3B/33378/RA.

**RAILWAY MECHANICAL ENGINEER** required by manufacturers of specialised equipment used in all types of motive power and rolling-stock. Training of approximately two years' duration would be given with a view to employment as sales engineer. Preference given to university graduate, under 30 years of age, who has served apprenticeship with a railway. Salary during training approximately £550, depending on qualifications.—Box 940, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

**N.E.R. HISTORY.**—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10s. 6d.—*The Railway Gazette*, 33, Tothill Street, London, S.W.1.

**M.O.S. APPROVED** organisation has immediate capacity in a new factory for all types of high-class sheet metal fabrication and light constructional work; plate up to  $\frac{3}{8}$  in. thickness handled; guillotine capacity up to 8 ft.  $\times$   $\frac{1}{2}$  in. and 10 ft.  $\times$   $\frac{3}{4}$  in.; bending up to 8 ft.  $\times$   $\frac{3}{4}$  in. and 10 ft.  $\times$   $\frac{1}{2}$  in.; rollers, circle cutters, oxy-acetylene profilers, etc. Work done in aluminium, brass, copper, mild and stainless steel, black and galvanised sheet, lead coated and tin plate. Facilities include gas, electric arc, argonarc and bronze welding; jig welding and the use of manipulators. Special paint finishes applied as required, also metal spraying, bonderising, phosphating, and rubber covering. Quantity production of items no obstacle—we have 24,000 sq. ft. of floor space and skilled personnel to cope. Apply **KEITH BLACKMAN LTD.**, Mill Mead Road, London, N.17.

**THE PERUVIAN CORPORATION** have the following vacancies on the railways in Peru:—Central Railway. **TRAFFIC LEARNER.** Single. Between 21 and 25 years of age. Good general education, with transportation experience either practical or theoretical. **ASSISTANT ENGINEER (CIVIL)** for Railway Drawing Office duties including Bridge and General Structural Steel Work Design, also Reinforced Concrete Structures. Must have sound technical training, preferably with previous railway experience. Age 30/35. A knowledge of the Spanish Language is preferable in both these appointments or willingness to learn within 6 months. Apply: **SECRETARY**, 144, Leadenhall Street, London, E.C.3.

**INTERNATIONAL RAILWAY ASSOCIATIONS.** Notes on the work of the various associations concerned with international traffic, principally on the European Continent. 2s. By post 2s. 2d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

they are classified under the Code E.317 corresponding to the American Classification E.6013.

**Pullman Car Company Interim Dividend.**—The directors of the Pullman Car Co. Ltd., have declared an interim dividend of 5 per cent on the "A" and "B" ordinary share capital, compared with 4 per cent in 1952.

**Diversion of Western Region Expresses.**—British Railways, Western Region announce that because of engineering work between Swindon and Gloucester, certain passenger trains will be diverted to alternative routes on Sundays, September 13—October 18 inclusive, and have from 25 to 60 minutes added to their timings. The trains affected include the 1 a.m. (Saturday night) Paddington to Swansea; and two down and three up Paddington-Cheltenham services. Some local and branch trains in the Swindon and Gloucester areas and in South Wales will also be retimed.

**Potters Bar Station Reconstruction, Eastern Region.**—The work now in hand on the Potters Bar station will necessitate possession of the main lines at Potters Bar on September 13. Services will be subject to delay and suburban and outer suburban services are being adapted. Passengers by trains leaving Kings Cross at 54 min. past the hour for Hatfield will travel by a special bus between New Barnet and Potters Bar, which will serve Hadley Wood. Trains at 21 min. past the hour for Cambridge line destinations and Peterborough will run via Hertford North, connecting at Stevenage with trains originating at Potters Bar. Main line trains are being diverted via Hertford North, which will add about 20 mins. to their timings and also necessitate alterations to the timings of certain Kings Cross—Hertford North services.

**American Car & Foundry Company Annual Meeting.**—At the annual meeting of the American Car & Foundry Company at Flemington, New Jersey, 77 per cent of the shareholders were represented, which is a record. The consolidated net

profit of the company for the three months ended July 31, after deducting \$2,899,132 taxes, amounted to \$2,268,642, as against \$1,553,092 for the same period last year. The company's backlog of orders now amounts to \$245,000,000, consisting of \$157,000,000 worth of defence products and \$88,000,000 worth of regular commercial products. There is the possibility of some parts of the defence backlog being cancelled, but additional orders may be received. An additional order of \$8,000,000 was received some few weeks ago.

**Pennsylvania Railroad Film.**—The Pennsylvania Railroad on behalf of the Delaware River Port Authority Presented a film entitled "Short Cuts to World Markets" at the Institute of Transport, London, on September 2. Those present included General J. Alex. Crothers,

Director, Delaware River Port Authority, and Colonel A. C. Bonaffon, General European Agent, Pennsylvania Railroad, with officials of British ports, directors and officials of steamship companies, shipping, and forwarding agents, chartering agents and members of the staff of the United States Embassy in London. The film, is well presented and deals with the many facilities available for the handling of import and export freight at the Port of Philadelphia.

**Electric Power from Natural Gas.**—An engine developing 1,100 h.p. that will run on methane gas derived from a continuous supply in the underground coal seams at the Point of Ayr Colliery, North Wales, has been manufactured at the Rugby Works of the English Electric Co. Ltd., and is displayed at the Engineering and

## High-Capacity Triple Hopper Wagons



Final shipment of 500 triple hopper wagons of 70-ton capacity, built by the American Car & Foundry Company at its Huntington Works for the Grand Trunk Western Railroad, a subsidiary of Canadian National Railways

Marine Exhibition at Olympia, London, W.14; the exhibition remains open until September 17. Besides driving alternators, providing electricity for the whole colliery, this engine, with four similar ones ordered by the National Coal Board will supply heat from the engine exhaust, and from the jacket, cooling water for pithead baths, domestic requirements, and so on.

**Moscow-Peking Direct Route Planned.**—It is reported that a direct route is planned between Moscow and Peking to shorten the present circuitous route via Harbin and Mukden, and reduce the journey time throughout from about a fortnight to nine days. It has also been announced that it is now possible to travel without change of carriage from the Soviet Union to neighbouring countries of Eastern Europe, bogies being changed at breaks of gauge.

**British Engineers' Association at Olympia.**—On the British Engineers' Association's stand at Olympia, which is shared by the British Electrical & Allied Manufacturers' Association, visitors to the Engineering, Marine and Welding Exhibition will see a striking centrepiece serving as a reminder of man's basic needs—food, clothing, warmth, shelter and transport. Associated therewith is shown a film strip, "Engineering in the Service of Mankind". The Association's posters throughout the exhibition halls seek to stimulate the younger visitors to make engineering their career. A small section of the stand displays the year's winning entries in the annual competition in craftsmanship organised by the Gauge & Tool Makers' Association.

### Forthcoming Meetings

September 12 (Sat.).—Permanent Way Institution. Joint meeting between members of the London and Birmingham Sections will visit Lillie Bridge Works, London Transport Executive, at 2.30 p.m.

September 12 (Sat.).—British Railways Southern Region Lecture & Debating Society. Visit to Southampton Docks. Party will leave Waterloo at approximately 8.30 a.m., arriving back at about 8.30 p.m.

September 12 (Sat.).—Railway Students' Association, London School of Economics & Political Science. River Thames Cruise, leaving Tower Pier at 2.30 p.m.

September 12 (Sat.).—Permanent Way Institution, East Anglia Section, at Ipswich at 2.15 p.m. Paper on "New Bridges for Old," by Mr. W. H. Weston, Western Region, British Railways.

September 14 (Mon.).—Institute of Traffic Administration, Birmingham Centre, at the Crown Hotel, Corporation Street, Birmingham, at 6.30 p.m. Supper Meeting. Opening address by Mr. H. H. Adlesee, Centre Chairman.

September 17 (Thu.).—Institute of Welding, North London Branch, at the Polytechnic, Regent Street, London, W.1, at 7 for 7.30 p.m. Paper on "Developments in Welded Pressure Vessel Manufacture," by Mr. H. Harris, B.Sc., Chief Metallurgist, Babcock & Wilcox Limited.

September 18 (Fri.).—Institute of Traffic Administration, Merseyside Centre, at the Stock Hotel, Queens Square, Liverpool, at 7.30 p.m. Paper on "Airline Management, Passenger and Freight Handling," by a representative of the British European Airways.

September 18 (Fri.).—The Railway Convalescent Homes. Re-opening of the

Convalescent Home, Ardenlea, Queens Drive, Ilkley, Yorks., by Sir John Benstead, C.B.E., President of the Homes, and Deputy Chairman, The British Transport Commission, at 3 p.m.

September 19 (Sat.).—Centenary of Doncaster Plant Works, 1853-1953, and Exhibition of Railway Rolling Stock. Exhibition to be opened by Mr. R. A. Riddles, Member, Railway Executive, at 11 a.m.

September 23 (Wed.).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, at 5.30 p.m. Presidential address by Mr. R. C. Bond.

September 23 (Wed.).—East Indian Railway Officers' Association, at the Connaught Rooms, Great Queen Street, Kingsway, London, W.C.2, at 6.30 p.m. for 7 p.m. Fiftieth Annual Dinner.

September 24 (Thu.).—East Indian Railway Officers' Association, at St. Ermins Hotel, Caxton Street, London, S.W.1. Reunion Tea Party for members, their wives, and families.

September 24 (Thu.) to September 26

(Sat.).—Rugby Engineering Society Jubilee Exhibition at the College of Technology and Arts, Rugby.

September 24 (Thu.).—Institute of Traffic Administration, Glasgow Centre, at the Kenilworth Hotel, Queen Street, Glasgow, at 7 p.m. Paper on "National Distribution," by A. MacNair.

September 24 (Thu.).—Irish Railway Record Society. Annual General Meeting in the Lounge of the C.I.E. Club, Earl Place, Dublin, at 7.45 p.m.

September 26 (Sat.).—Permanent Way Institution, London Section. Visit to Redbridge Sleeper & Creosoting Works, British Railways, Southern Region.

September 28 (Mon.).—Historical Model Railway Society. Illustrated talk by Mr. F. C. Hambleton: "Photos taken at random from my Collection," at the headquarters of the Stephenson Locomotive Society, 32, Russell Road, W.14, at 7 p.m.

September 30 (Wed.).—Institute of Traffic Administration, Preston Centre, at the Victoria & Station Hotel, Preston, at 7.30 p.m. Paper on "Road Haulage," by Mr. A. Miller.

### Railway Stock Market

There has been much hesitancy in stock markets because of a general tendency to keep attention fixed on Wall Street. Nevertheless no big slump is expected.

An easier trend in the industrial section of markets over here is welcomed in the City, being regarded as a natural development after the rise in evidence during the past two months. Markets were extremely short of stock, and the selling now in evidence, though small, will, it is being argued, make for healthier and more active markets later on. Many leading industrial shares still offer generous yields, as there would have to be a very heavy fall in future profits to necessitate lower dividend payments. The small reaction in markets has been caused more by falling off in demand than by selling; and prices would probably respond strongly if there were only a moderate increase in buying interest. Details of the first of the big steel issues, which may be published by the end of the month, continue to be awaited with considerable interest. Part of the increased demand that has been in evidence for gilt-edged funds is explained by the fact that holders of British Funds will be able to exchange into steel shares at prices to be announced when the steel issues are made.

Foreign rails have received a fair amount of attention this week, though there were few notably active stocks apart from United of Havana. This again attracted at higher prices on the view that an announcement is imminent on acquisition terms for the railway and how the Cuban Government moves link up with Mr. Wenner-Gren's proposals. Expectations persist that an equivalent of around £5,000,000 will be offered for the railway, probably in Cuban Government bonds, and the belief that this will make the various stocks worth well above their current prices, has brought in fresh buyers. At the time of writing the 4 per cent "A" stock has risen to 86 and the 4 per cent "B" also changed hands actively around this level, while the second income stock attracted considerable attention and advanced to 32½. Moreover, there was also considerable speculative demand for the consolidated stock which moved up to 5.

The market is taking the view that, if hopes are realised, the "A" and "B"

stocks would be worth around par, though it is recognised that it might be some while before the actual pay-out in bonds or cash is made to the company. Meanwhile, however, an official statement is awaited. It is realised that had it not been for the foresight of the directors in reorganising the capital early this year, any offer that might have come along would probably have been much less satisfactory to that now expected, and might have led to legal complications as to the rights attaching to the old stocks, particularly the dollar clause that attached to one of them.

Buyers were also in evidence again for Antofagasta stocks, the ordinary rising to 10 and the preference stock to 51. Sentiment has been helped by general recognition that both stocks are much undervalued in relation to the value of the company's assets. It is not assumed that a take-over offer is in prospect, but nowadays the value of assets is much more important in influencing the market prices of stocks and shares.

Canadian Pacific reflected the downward trend on Wall Street, and were \$42½, but the preference stock was steady at £67½ with the 4 per cent debentures at £85½. White Pass & Yukon no par shares were lower again at \$25 with the convertible debentures £91.

Nitrate Rails shares were 20s. 6d. and San Paulo units 5s. 3d. Brazil Rail gold bonds have changed hands at 6½. Dorada Railway ordinary stock showed business around 56, and Costa Rica ordinary stock around 10. Guayaquil & Quito first bonds marked £37½. Manila Railway "A" debentures were 78 and the preference shares 7s. 9d.

Road transport shares have been firm with Southdown at 32s., West Riding 35s., and Lancashire Transport 51s. B.E.T. deferred units eased to 29s.

Engineering and kindred shares became firmer with Vickers at 49s. 6d. and Guest Keen 50s. 9d. Beyer Peacock were 34s. 3d., Birmingham Carriage 28s. 1½d., Hurst Nelson 41s. 6d., North British Locomotive 12s. 4½d., Vulcan Foundry 20s. 7½d. and Gloucester Wagon 12s. 6d. Wagon Repairs 5s. shares were 14s. 6d. and Charles Roberts 5s. shares 16s. 3d.